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TECH ADVISOR

APRIL 2021

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LENOVO'S STUNNING NEW LAPTOP

PLUS: HANDS-ON WITH WINDOWS 10X

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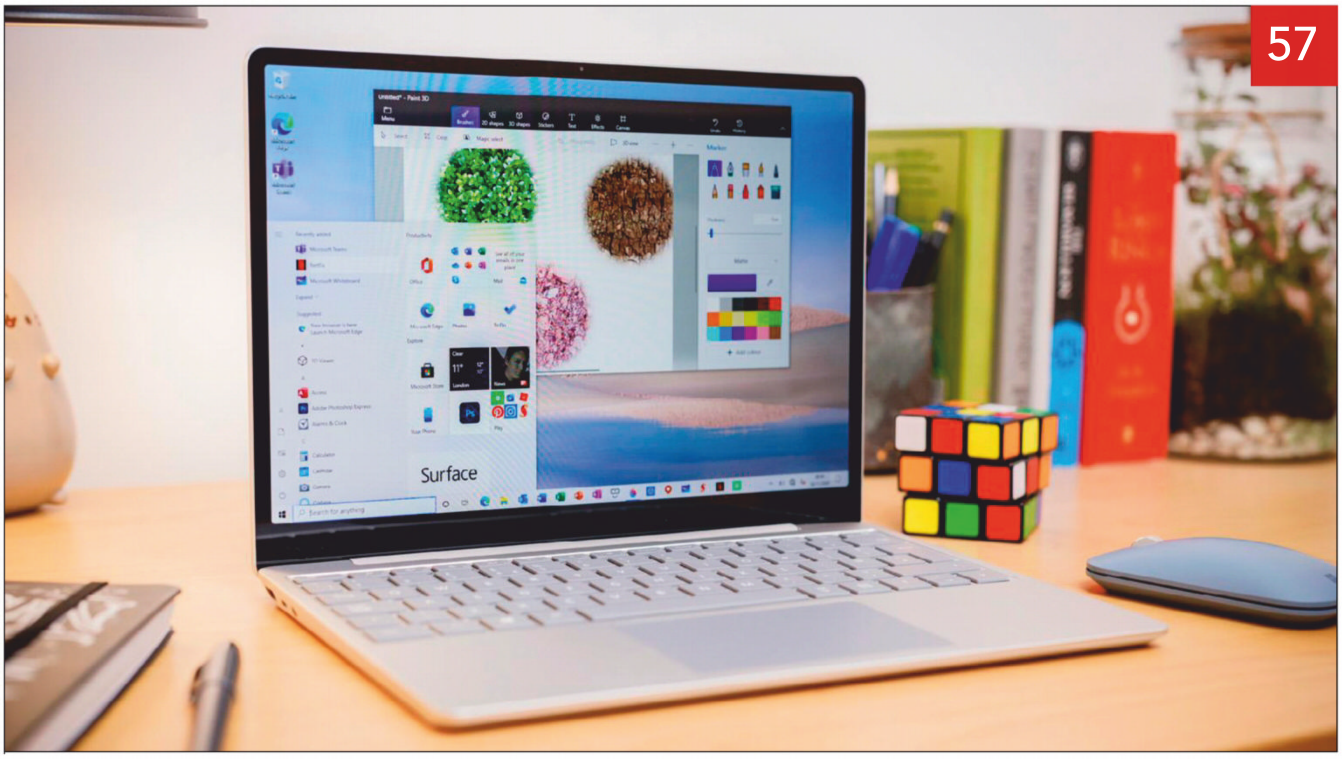

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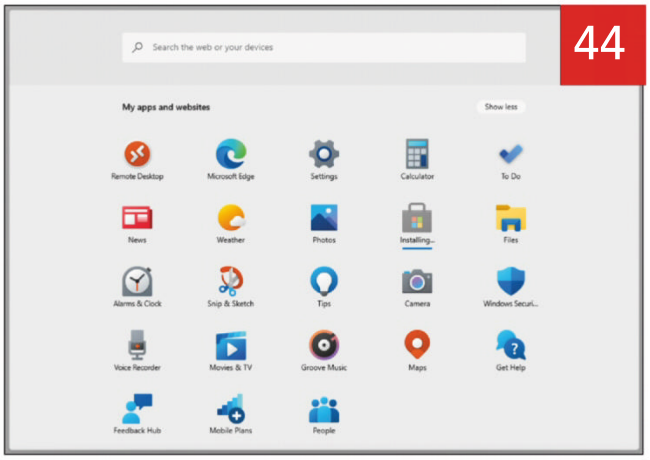
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Credit: Getty Images/richardwatson

Street View

Microsoft launches Surface Pro 7+ with Tiger Lake and LTE options

Microsoft unveils its latest tablet. MARK HACHMAN reports

Microsoft has unexpectedly launched the Surface Pro 7+, a refreshed Surface Pro tablet with Intel's 11th-gen 'Tiger Lake' processors inside, LTE options and the removable SSD that Microsoft first introduced with the Surface Pro X.

Prices begin at £909. Adding the LTE Advanced option essentially tacks on a substantial premium, with the option only available on more powerful configurations whose price begins at £1,129. Neither price factors in a Signature Type Keyboard and Surface Pen, which cost about £149 and £99, respectively. Matte black and platinum colour options are available.

Microsoft's Surface Pro 7+ is almost physically indistinguishable from its predecessor, the Surface Pro 7.

The Surface Pro 7+ name is appropriate, as the Surface Pro 7 included Intel's 10th-gen Ice Lake processors but was otherwise just a spec bump from its predecessor. With the Surface Pro 7+, Microsoft is not only upgrading the internal components, but adding the LTE option off the bat, something that it hasn't always done. (Unfortunately, 5G isn't yet included.) The only apparent physical changes is the SSD drawer.

Microsoft positioned the design of the Surface Pro 7+ as at least a partial response to the pandemic, which has forced many of its customers to work from home and adapt to what you might call extraordinary working conditions. For one, Microsoft said that customers have been forced to move around their homes unexpectedly, and work from odd set-ups; the unexpected demands of Zoom/Teams calls, downloads, and other loads on a home wireless network has made offloading the wireless data burden to a cellular network a convenience, if not a priority.

Internally, users will have a choice of buying versions of the Surface Pro 7+ with either a dual-core Core i3-1115G4 processor, or two quad-core options: the Core i5-1135G7 and the Core i7-1165G7. A change no one will mind: Microsoft has retired the 4GB RAM option, offering 8GB, 16GB, and a new 32GB LPDDR4x memory option.

Users are now accustomed to "camera to camera is the new face to face," added Robin Seller, the corporate vice president of Microsoft Devices, in a blog post. The new emphasis on videoconferencing has turned the high-resolution cameras built into the Surface Pro 7 and the new 7+ from luxuries to essentials. The 5Mp user-facing camera and an 8Mp rear camera both capture 1080p video, and a pair of far-field mics to pick up your voice. It appears that the Surface Pro 7+ speakers have been upgraded to use Dolby Atmos audio technology, which has also been used on the Apple iPad Pro and Amazon Fire HD 10.

The Surface Pro 7 adds an SSD drawer, and the ability to swap out the SSD inside.

Somewhat ironically, the new Tiger Lake processors theoretically offer the new Thunderbolt 4 port option. But Microsoft, which pioneered the high-speed I/O dock with the Surface Dock and its successor, the Surface Dock 2, still chooses to use its own Surface Connector.

Microsoft still apparently hasn't changed its stance toward the removable SSD that the company built into the Surface Pro X and the Surface Laptop 3. Then, Microsoft Store representatives – when Microsoft still operated Microsoft Stores – told us that the removable SSD was being used as a means to migrate data from one Surface Laptop 3/Surface Pro X to another, rather than as a way to allow end users to upgrade their storage options. Microsoft says the Surface Pro 7+ introduces a "removable SSD for data retention".

SPECIFICATIONS

Because the Surface Pro 7+ is a Microsoft Surface for Business device, it ships only with Windows 10 Pro. Microsoft 365 apps come standard, with a 30-day trial period before requiring a licence.

Display: 12.3in PixelSense display (2,736x1,824)

Processor: Core i3-1115G4 (Wi-Fi), Core

i5-1135G7 (Wi-Fi/LTE) Core i7-1165G7 (Wi-Fi)
Graphics: UHS (Core i3), Iris Xe (Core i5, i7)
Memory: 8GB, 16GB LPDDR4x (Wi-Fi, LTE); 32GB LPDDR4x (Wi-Fi)
Storage: 128GB or 256GB (Wi-Fi or LTE); 512GB or 1TB (Wi-Fi)
Ports: 1x USB Type C, 1x USB Type A, microSDXC reader, Surface Connect, 3.5mm audio jack, Nano-SIM
Camera: 5Mp front-facing, 8Mp rear-facing, w/1080p video
Battery: 15 hours / 13.5 hours with LTE Advanced
Wireless: Wi-Fi 6 (802.11ax), Bluetooth 5, Qualcomm X20 modem
Operating system: Windows 10 Pro
Dimensions: 292x201x8.5mm
Weight (not including keyboard): i3, i5 (Wi-Fi): 770g; i5 (4G): 796g; i7 (Wi-Fi): 784g

PRICE

£909: Core i3/8GB RAM/128GB SSD
£979: Core i5/8GB RAM/128GB SSD
£1,129: Core i5/8GB RAM/128GB SSD (LTE)
£1,249: Core i5/8GB RAM/256GB SSD
£1,399: Core i5/8GB RAM/256GB SSD (LTE)
£1,479: Core i5/16GB RAM/256GB SSD
£1,629: Core i5/16GB RAM/256GB SSD (LTE)
£1,529: Core i7/16GB RAM/256GB SSD
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£2,329: Core i7/16GB RAM/512GB SSD
£2,749: Core i7/32GB RAM/1TB SSD

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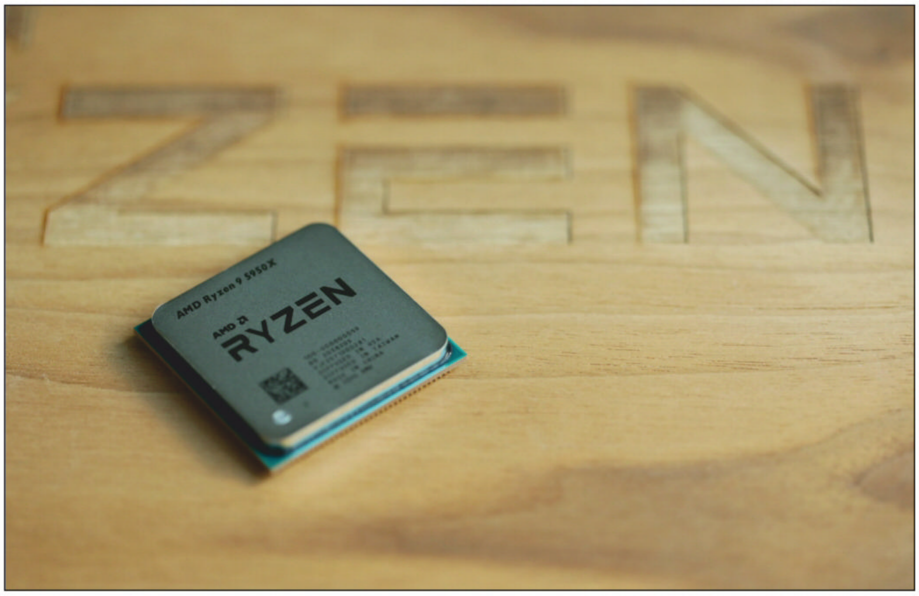
AMD CEO Lisa Su talks chip shortages, Apple M1, GPU prices and tariffs

Lisa Su talks about increasing supply and how 16- and 64-cores aren't the end for CPUs. GORDON MAH UNG reports

If you're still smarting from the inability to buy AMD's fantastic Ryzen 5000 CPUs and Radeon RX 6000 GPUs many months after their release, CEO Lisa Su feels your pain but says more products are on the way.

"I do want to be very specific, and the main thing I want to say to our fans and enthusiasts is: I get it, I completely understand that there's a huge desire for more Ryzen 5000 and Radeon 6000 graphics cards," Su responded during a recent press briefing when asked what she would say to her exasperated customers. Her talk addressed supply issues, Apple's M1 chip, the impact of tariffs, and whether 16-cores was the limit for consumers.



AMD's Ryzen 9 5960X processor.

Although AMD's Ryzen 5000 chips have succeeded in kicking Intel's Core CPU in the shins, and its Radeon RX 6000 graphics cards can indeed hang with Nvidia's best GPUs, actually buying the hardware has been all but impossible, becoming an Internet meme among frustrated buyers.

"What I can tell you is we've shipped a lot into the channel," she said. "It takes some time for it to work itself through. There will be more, you will continue to see refreshes as we go into the first quarter and into the first half."

Despite this, you won't be finding the parts falling off trees tomorrow.

"I will say that it will still be tight, but there is a lot of product that's coming to the market," Su said. "We appreciate that there is so much interest and desire for these products and we look forward to getting more into the hands of our users."

Su did say the problem largely stems from overwhelming demand rather than any manufacturing issues. With AMD now shipping more and more CPUs to very large PC OEMs, the company has had to balance demands in real-time, choosing how to supply parts to both PC makers and consumers.

"There is some real-time prioritization between end-user and OEM, but we understand that consumers want more and it's very high on our priority list to meet this high demand," Su said.

Apple's M1 chip

Beyond the upfront supply issues, Su said Apple's well-received ARM-based M1 opened up opportunities for the company and could open more specialized, purpose-built processors.

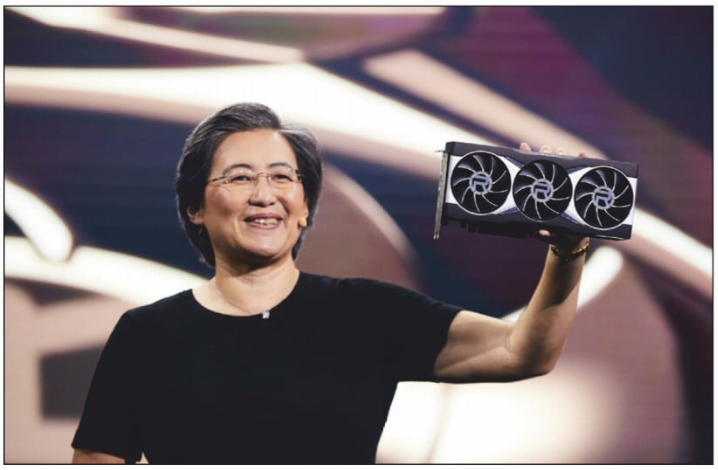
"The M1 is more about how much processing and innovation there is in the market. This is an opportunity to innovate more, both in hardware and software, and it goes beyond the ISA," Su said in a response to a question from Anandtech's Ian Cutress. "From our standpoint, there is still innovation in the PC space – we have lots of choices and people can use the same processors in a lot of different environments. We expect to see more specialization as we go forward over the next couple of years, and it enables more differentiation. But Apple continues to work with us as their graphics partner, and we work with them."

CONSUMERS WILL EVENTUALLY GET MORE THAN 16 CORES

Su also said she didn't think current core counts were necessarily the limit for customer's needs either.

"There will be more core counts in the future," she said. "I would not say somehow 16-core and 64-core are the limits. But I think they will come as we scale other parts of the system as well."

And yes, while non-committal on any decisions or products in the works, Su said AMD is looking at designs that combined "big" high performance cores with "little" low performance cores like Intel and ARM, but added its designs could be big, little or medium too.



Lisa Su holding the reference Radeon RX 6900 XT.

WHAT AMD WILL DO TO OFFSET TARIFFS

Besides not being able to buy products, impending tariff increases due to exemptions that will expire this year was also on the mind of Su and AMD who will try to keep prices as low as possible.

"We're very committed to trying to keep the GPU pricing closer, as close to SRP (suggested retail price), as possible from an overall fairness stand point," Su said. To help relieve the pricing increases, Su said AMD will keep selling its Radeon RX 6000 reference boards indefinitely. Typically, AMD only makes the boards available until partners can spool up their own designs but, they will be available directly to consumers at the suggested retail price.

"(Reference board Radeons) will be offered on AMD.com at SRP," she said, "and we will encourage others to as well."

The most intriguing and innovative PC hardware

CES 2021 was virtual, but the parade of PC hardware went on. TECH ADVISOR STAFF report

CES 2021 was virtual, but the parade of PC hardware went on regardless. Big names AMD, Intel, and Nvidia all made splashy announcements, and PC manufacturers followed in their wake with new products, many coming soon.

No time to sift through all our CES coverage? No problem. Read on for our Best of CES picks – the most intriguing and innovative products we saw.

AMD RYZEN 5000 MOBILE

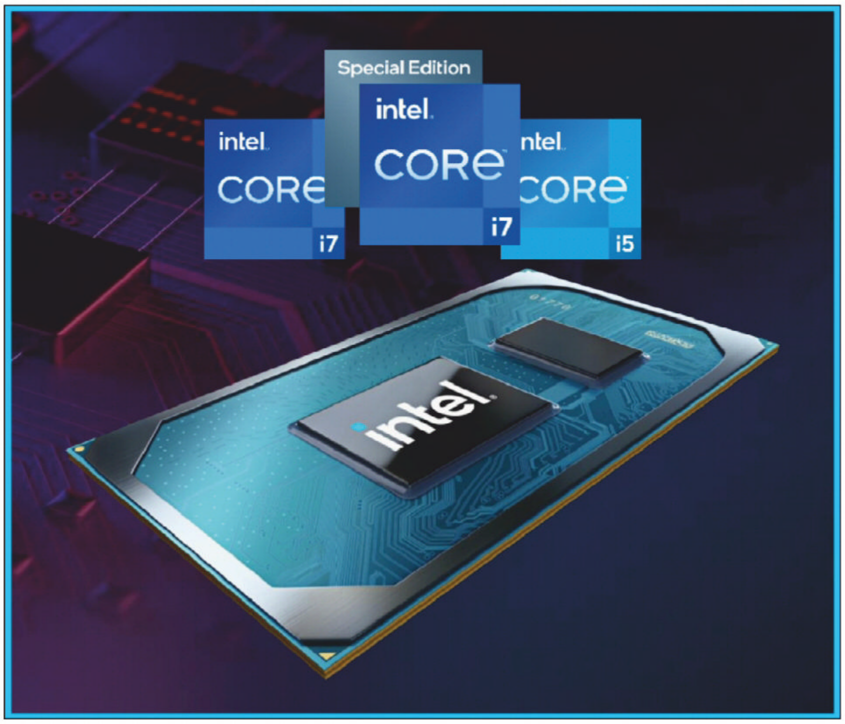
Last year you couldn't find a high-end gaming laptop with a Ryzen CPU In it to save your life. This year the tables are turning, with probably a dozen different designs announced or in the works.

That should confirm the confidence laptop makers have in AMD's Ryzen 5000 Mobile, based on the award-winning Zen 3-based Ryzen 5000 desktop chip. While we don't have independent testing yet, we expect it to dominate in multi-core performance and take the lead in single-core performance. Gordon Mah Ung

INTEL TIGER LAKE H35

Intel's 11th-gen Tiger Lake CPU has been a legitimate ray of light in a Ryzen-clouded sky. Featuring improved efficiency, high clocks, and leading integrated graphics, we'd honestly say Tiger Lake was the best CPU for what people do in a small laptop.

With Tiger Lake H35 (pictured), we think Intel may have found a sweet spot, promising up to 5GHz clock speeds in laptops that aren't quite thin-and-light but weigh far less than your typical gaming laptop. It probably won't win any races with AMD's new Ryzen 5000, but it's likely to offer lots of speed for what most people do. Gordon Mah Ung



NVIDIA GEFORCE RTX 3060

Among the many goodies Nvidia announced at CES, the GeForce RTX 3060 desktop graphics card deserves to be highlighted because it gives mainstream gamers a next-gen graphics option that doesn't require a second mortgage (although spiking custom card prices won't help).

Better yet, the GeForce RTX 3060 includes an ample 12GB of GDDR6 memory – more than any other graphics card in the Ampere line-up shy of the flagship RTX 3090. (You can thank AMD's Radeon cards for forcing Nvidia to be more generous.) Either way, the affordable GeForce RTX 3060 should be a hit when it launches in late February. Brad Chacos

NVIDIA GEFORCE RTX 3000 MOBILE

Nvidia's mobile GPUs have never been challenged, and the company keeps innovating. Just four months after its desktop 30-series chips launched, we have the mobile version. We saw it in essentially every

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GEFORCE RTX 3080 LAPTOPS
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World's Fastest Laptops
Up to 16GB GDDR6 Memory
100+ FPS Ultra 1440p
Starting at $1999

Alienware m15

Average performance across multiple popular graphics-intensive games at 1440p, i7 CPU

RTX ON
ALIENWARE
NVIDIA

single gaming laptop released at CES, and it should give us performance and efficiency we've never seen before in the mobile space. It's no surprise, but the GeForce RTX 30-series stands up as clearly one of the best technologies at CES. Gordon Mah Ung

ASUS ROG FLOW X13

The Asus ROG Flow X13 offers a unique take on RTX 30-series laptops coming out of CES. Rather than trying to cram a powerful GPU into its slender chassis, Asus opted for a slender laptop paired with a semi-proprietary external GPU called the XG Mobile.

This offers a win-win-win for laptop gamers. When not gaming the ROG Flow and its GTX 1650 weighs 1.3kg and should be easy to carry around for work purposes. But when you want to game, you plug in the 1kg XG Mobile and enjoy the full performance of a mobile RTX 3080 without any concerns about thermal throttling. Adam Patrick Murray

HP ELITE DRAGONFLY MAX

The HP Elite Dragonfly Max (pictured overleaf) is a corporate laptop made for the times we live in, when everyone is working remotely and staring into their webcams for hours on end in videoconferences. For remote work, the laptop weighs about 1.1kg, and it sports a 360-degree hinge for versatility as you move your workspace from desk

to kitchen counter to sofa to rug. For videoconferencing, it offers high-res cameras, extra mics, and AI-enhanced audio features.

As a corporate laptop, it's equipped with extra security and performance features, plus an integrated Tile module for trackability. It's also one of the coolest-looking laptops we've seen, with a choice of iridescent blue or black shell and gorgeous display options.

LENOVO LEGION 7

The Legion 7 has a lot going for it simply with its Zen 3-based Ryzen 9 and GeForce RTX 30-series graphics, wrapped in a 16in laptop with a QHD-resolution (2,560x1,600), 16:10 display.

But what really helped the Legion 7 stand out among all the other Legion gaming laptops Lenovo announced is its RGB lighting, which has now spread beyond the keyboard and chassis ring to laptop's exhaust vents. How cool is that? Melissa Riofrio

MSI STEALTH 15M

With a quad-core Tiger Lake H35 and a GeForce RTX 3060 Max-Q GPU, the 1.69kg MSI Stealth 15M isn't going to win any drag races against laptops with more cores or fatter GPUs. But for a lot of us who just want the right amount of CPU performance and GPU performance, MSI's Stealth 15M is on our short list. Gordon Mah Ung

RAZER BLADE 15 & RAZER BLADE PRO 17

Many, many gaming notebooks will roll out featuring Nvidia's latest 30-series mobile GPUs, the Razer Blade 15 and Razer Blade Pro 17 among them. And while Razer's promotional images of both look amazing, it's the sheer variety of display options that catch our eye. Razer allows customers to choose from 1080p, 1440p, and 4K, all at high refresh rates. The sweet spot? A 165Hz, 1440p display option paired with a GeForce RTX 3070. Count us in. Mark Hachman

ACER PREDATOR XB273U NX MONITOR

Display technology rocked at CES 2021. We saw the first wave of (pricey) HDMI 2.1 monitors, the rise of 1440p screens on notebooks, and ultra-fast refresh rates becoming the norm on gaming laptops. The highlight for me was Acer's Predator XB273U NX. Its 1440p resolution is PC gaming's sweet spot right now, offering a tangible visual upgrade over 1080p without requiring a £500-plus graphics card to power it. You may still want a potent GPU for this monitor, however, because its refresh rate is a blistering 265Hz with a mere 0.5-second grey-to-grey response time. It's fast.

It's also high-quality, covering 95 per cent of the DCI-P3 colour spectrum, with an 'HDR capable' panel that's TÜV Rheinland Eyesafe-certified to emit less blue light than standard LCDs. Maybe that'll help you get to sleep more quickly after a late-night gaming session.

The cherry on top is that this is a G-Sync Esports panel, which means it includes Nvidia's awesome Reflex Latency Analyser to help you fine-tune your rig or your games for maximum responsiveness. It's an essential tool if you're an esports pro, where every millisecond can make the difference between victory or defeat.

All that cutting-edge technology doesn't come cheap: the Acer Predator XB273U NX will cost £999 when it hits the streets in May. Brad Chacos

RAZER 'PROJECT HAZEL' N95 MASK

Given the response that Razer's 'Project Hazel' N95 mask (pictured below) received, this concept (which may or may not be produced) was the unexpected star of the show. It's a potent combination of sanitation (N95 filters and a self-sanitizing case) utility (a transparent face mask and voice amplifier) and style (RGB), in a product category being worn by pretty much everyone in the country. Mark Hachman

6 innovations that pushed laptops forward at CES

Cooler, better, faster, stronger. BRAD CHACOS reports

CES 2021 may have been virtual, but the event still offered up a trove of PC innovations, and that goes doubly so in the mobile space. Intel, AMD and Nvidia all announced new laptop CPUs or GPUs, which in turn unleashed new generation of cutting-edge notebooks from every major vendor. We've already covered our favourite PC hardware announcements on page 11.

Beyond specific products, we wanted to highlight some of the most fascinating laptop advances on display during the show. We didn't see as many wild-and-crazy concept PCs as we normally do at

CES – chalk it up to the difficulties of the past year. Nonetheless, several features and trends point to a bright future for notebook buyers, especially if you're in the market for a gaming PC, as so many people are these days.

Without further ado, these are the best laptop innovations we witnessed at CES 2021.

1. ASUS ROG XG MOBILE

The Asus ROG Flow X13 is a diminutive 1.3kg, 13in gaming laptop. Despite that small, slender profile, Asus claims the Flow X13 can outpunch desktop-replacement-class notebooks that weigh significantly more. How? With the companion ROG XG Mobile dock that Asus offers.

Asus equips the actual laptop with up to a Ryzen 9 5980HS, paired with a GeForce GTX 1650 – a discrete graphics card, but one capable only of modest gaming. The magic happens when you connect the Flow X13 to the XG Mobile, which includes Nvidia's new GeForce RTX 3080 inside along with an array of helpful ports.

Now, boosting laptop gaming with external graphics docks is nothing new – that's the Razer Blade Stealth's whole schtick. But most of those efforts revolve around large docks that handle bulky desktop graphics cards.

The ROG XG Mobile instead opts to use Nvidia's mobile RTX 3080. That means it can't be upgraded, but it also lets Asus craft the dock using a tiny 1kg design that slips easily into a custom travel bag designed to fit both the docks and the Flow X13. That's easy enough to haul around if you need to – unlike other external graphics solutions. Better yet, the versatile design means you can schlep the bare laptop around all day without throwing out your back, then plug into the ROG XG Mobile for

The Asus ROG Flow X13 in action, with the tiny ROG XG Mobile graphics dock behind/to the right of it.

hot and heavy gaming sessions at home, or hot and heavy creation sessions at the office.

2. LAPTOP DISPLAYS LEVEL UP

Our other favourites are trends rather than discrete products. The most noteworthy? Laptop panels are levelling up big-time in 2021, most notably in gaming rigs, but actually across the board.

Most gaming notebooks tend to offer a couple of standard options: A 1080p 60Hz display, maybe a 144Hz panel if you're lucky, and often a premium 4K 60Hz option, all in a standard 16:9 aspect ratio. Your options are about to get a lot more varied.

Most exciting? The sudden availability of laptops with 1440p displays, thanks to Nvidia's advocacy with panel makers and laptop vendors. We lamented the lack of 1440p laptops just last year, but at CES 2021, we saw 1440p gaming laptops announced by the likes of Lenovo, Acer, Razer and Asus, among others. Finally.

Faster displays became far more common as well, with virtually every major vendor expanding its refresh rate options. Speedy 144Hz and 300Hz+ 1080p display used to be a luxurious premium upsell, but those now come standard in laptops like the MSI Stealth 15M, the Alienware m17, Acer's Predator Triton 300 SE and Razer's upgraded Blade. Several gaming notebooks offer blistering 240Hz 1440p options as well, marrying both trends.

Beyond gaming, usability was a focus for the laptops of CES 2021 as well. The Lenovo Legion 7 offers a 16:10 aspect ratio, and the

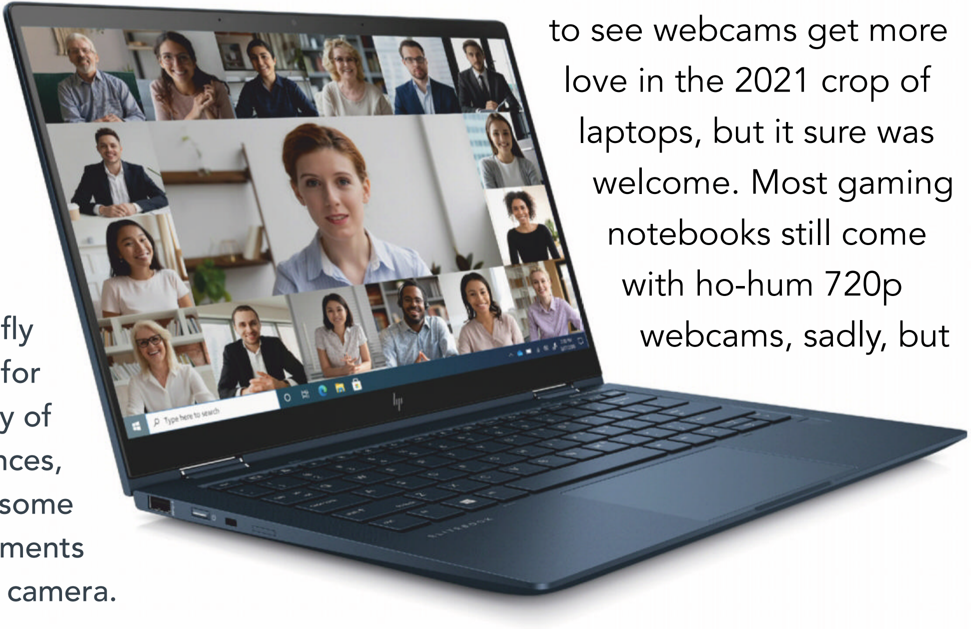
The upgraded Razer Blade offers some of the most impressive display options around, starting with high refresh rate panels with the ability to get even faster at 1080p, 1440p, and 4K.

The HP Elite Folio dumps the standard 16:9 widescreen aspect ratio for a more productivity-focused 3:2 configuration, paired with screen-obscuring privacy features.

HP Elite Folio opts for a 3:2 display, bucking the widescreen 16:9 ratio that's become ubiquitous. More vertical screen space means more real estate for spreadsheets. The HP Elite Dragonfly G2 pairs a blazing 1,000-nit display with a SureView privacy feature to keep prying eyes at bay. The Alienware m17's 4K option can be paired with Tobii eyetracking. Lenovo partnered with TÜV Rheinland on a panel with reduced blue light levels to keep your eyes from becoming strained. Keep the options coming.

3. WEBCAMS DON'T (ALWAYS) SUCK ANYMORE

With everyone working and schooling via Zoom, it wasn't surprising to see webcams get more love in the 2021 crop of laptops, but it sure was welcome. Most gaming notebooks still come with ho-hum 720p webcams, sadly, but



The HP Elite Dragonfly Max is designed for our new workday of serial videoconferences, with extra mics, some new audio enhancements and a 5Mp camera.

the MSI GE76 Raider Dragon Edition and Alienware's new laptops bump that up to 1080p.

But HP leads the pack here, with a strong focus on webcam performance in its more business-focused laptops. The HP Elite Dragonfly Max packs a 5Mp webcam with over 4X the pixels of your standard 720p model, paired with a manual camera switch to ensure it's disabled, and not one, not two, but four microphones for better audio as well. "In addition to all this hardware, HP builds in a raft of audio enhancement technologies including HP Audio Boost for noise reduction, HP Sound Calibration to optimize the signal to your hearing, and HP Dynamic Audio to adjust the sound quality for speech, music or movies," we wrote in our coverage.

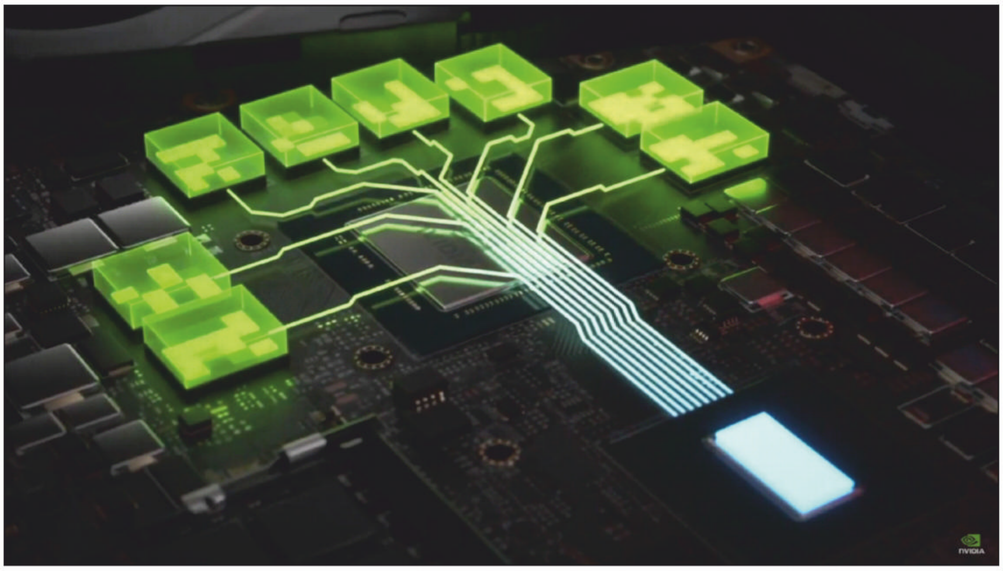
The consumer-focused HP Envy 14, on the other hand, sticks to a 720p webcam with a physical shutter, but surrounds it with 'HP Enhanced Lighting' – a selfie light display intended to make you look better in all those video meetings.

Both of HP's laptops, as well as the Elite Dragonfly G2 discussed earlier, bake in AI tools to filter out background noise coming through the mics, because your audio feed should be just as clean as your video. Hopefully other vendors will follow in HP's footsteps as the year goes on.

4. COOLER, FASTER GAMING LAPTOPS

We won't dive too deeply into the technical weeds here, but there were a pair of extremely geeky gaming laptop trends worth highlighting: resizable BAR for laptops and the exploding popularity of liquid metal compound paste on the CPU.

AMD kicked off interest in the PCIe specification's Resizable BAR feature



Resizable BAR lets the CPU tap fully into the GPU's memory, offering performance gains in some scenarios.

when it introduced Smart Access Memory in its Ryzen 5000 CPUs and Radeon RX 6000 GPUs on the desktop. It's underpinned by the standardized (but previously unutilized) PCIe option. Resizable BAR (and Smart Access Memory) lets your CPU tap into the full memory capacity of your GPU, rather than limiting it to 256MB chunks. The resulting performance gains depend greatly on your game, your resolution, and even your settings, but as our testing with the Radeon RX 6900 XT showed, the feature can improve performance up to a very noticeable 10 per cent.

Now that free extra performance is coming to laptops. Nvidia said its new GeForce RTX 30-series laptop graphics chips support Resizable BAR. Intel explicitly called it out for its new 11th-gen Tiger Lake H35 chips as well. AMD didn't mention Resizable BAR or Smart Access Memory during its Ryzen 5000 Mobile introduction, but given that the company's own desktop chips sparked this trend, consider it a lock – especially since Nvidia claims its Resizable BAR implementation will work on all the newly announced chips from both Intel and AMD.

Moving on, liquid metal is picking up steam. Liquid metal came into vogue among desktop overclocking enthusiasts because it offers superior cooling performance compared to standard thermal paste. Unfortunately, its fluid nature and reaction to aluminium makes it difficult to use in mass production. Laptop makers need to prevent the highly efficient and mercurial-like liquid metal from flowing onto the surface-mounted chips near the CPU die. Asus and Lenovo have figured it out, and Lenovo announced its use in Legion gaming laptops. Asus is applying it in every ROG-branded notebook. Asus actually started doing that when Intel's 10th-gen mobile processors came out, but it's interesting to see such a nerdy feature become more mainstream. The companies' laptops might have quieter fan noise and longer turbo boost speeds as a result.

5. SWAPPABLE SURFACE SSDS

Microsoft revealed the Surface Pro 7+ at CES 2021, a business-friendly version of its flagship convertible. It packs goodies like Intel's new Tiger Lake chips and LTE options, but we want to highlight how the Surface Pro 7+ has been rejigged to allow users to replace its SSD.

That's nothing new for the vast majority of laptops, but since the Surface joined Apple in leading the anti-upgrade charge in premium thin-and-light laptops, we're crossing our fingers that this signifies a new trend for Microsoft, and that future consumer Surface models will include swappable storage. Please?

6 WHAT'S NEXT FOR WI-FI

This hot new technology wasn't found in many laptops at CES 2021 but expect to see it soon. On 7 January, mere days before CES kicked off, the Wi-Fi Alliance announced its Wi-Fi 6E certification programme, unleashing the wireless technology on the 6GHz spectrum. Those relatively uncrowded airwaves should offer a speed boost over devices that currently use the congested 2.4GHz and 5GHz bands.

Router makers jumped on the announcement with an arsenal of Wi-Fi 6E routers to get the ball rolling. Of the major laptop vendors, we spotted Wi-Fi 6E only on the luxurious MSI GE76 Raider Dragon Edition at CES, but expect to see it become more common soon. Note: other notebook vendors touted Wi-Fi 6 connectivity, but that doesn't open up the 6GHz spectrum like Wi-Fi 6E. Instead, it's a rebranding of the existing protocol formerly dubbed 802.11ax. It's fast, but it's not Wi-Fi 6E.

The Linksys AXE8400 Wi-Fi 6E router features a 5Gb/s WAN port and four gigabit Ethernet ports.

The smart home products that caught our attention

Attending a virtual trade show isn't ideal, but these new offerings still made an impression. MICHAEL BROWN & BEN PATTERSON report

If you think judging a product based on what you can see and hear in a jam-packed and noisy convention centre is hard, imagine doing it over a Zoom connection. That being said, these smart home and home entertainment products impressed us despite the limitations of the venue.

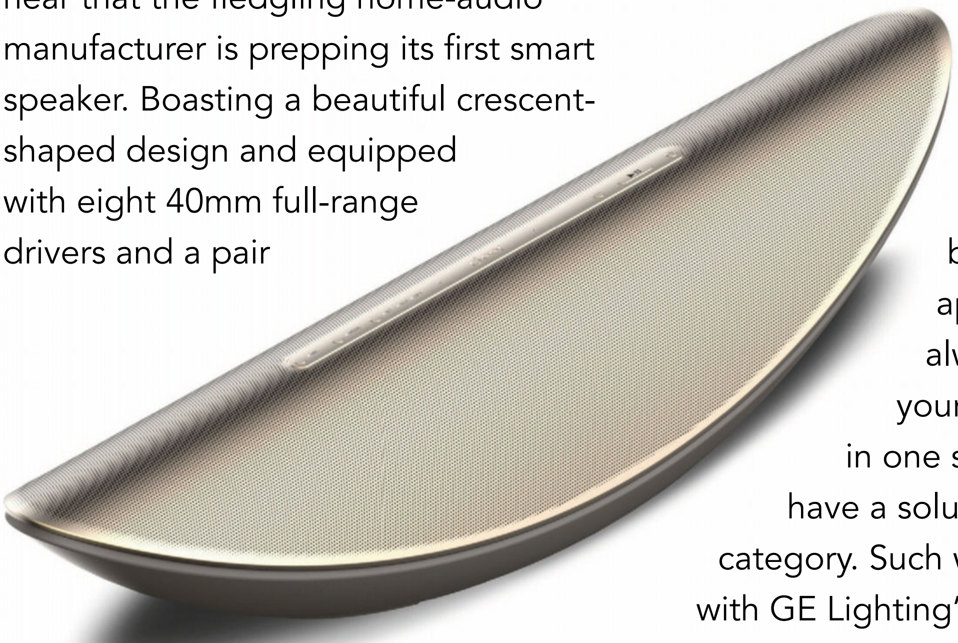
CHAMBERLAIN MYQ PET PORTAL

Wait, three thousand bucks (around £2,200) for a doggie door? You heard right, but Chamberlain's myQ Pet Portal (pictured) is no cut-rate plastic flap. Rather than a standard pet door that you install in an existing door, the myQ Pet

Portal arrives pre-installed in an exterior door manufactured by the doormaking artisans at Kolbe Windows and Doors. The Pet Portal itself boasts doors that slide open like an elevator, while a camera, microphone and speaker sit in a square situated above the opening. You can control the Pet Portal manually using myQ's mobile app, or dogs can let themselves in and out if you attach a sensor to their collars. The doors will also close automatically to keep unwanted critters from sneaking in behind your pooch.

CLEER CRESCENT SMART SPEAKER

We're big fans of Cleer's Bluetooth headphones, so we were pleased to hear that the fledgling home-audio manufacturer is prepping its first smart speaker. Boasting a beautiful crescent-shaped design and equipped with eight 40mm full-range drivers and a pair of 3.3in woofers, the Google Assistant-powered Crescent (natch) supports high-resolution audio streaming, while beamforming technology features such listening experiences as Wide Stereo Mode, Room Filling Mode, and 3D Immersive Mode. The $700 (around £510) Crescent also comes with 3.5mm, optical, and Ethernet ports, along with support for AirPlay 2, Chromecast and Spotify Connect.



The Cleer Crescent smart speaker is powered by Google Assistant.

GE LIGHTING CYNC FAN SPEED SMART SWITCH

GE Lighting's Cync Fan Speed Smart Switch features a similar industrial design to its smart lighting controls and lets users select four speeds for a connected ceiling fan.

Settling on one smart home ecosystem will eliminate the confusion instilled by juggling disparate apps, but it's not always problem with your favourite product in one subcategory doesn't have a solution for a different category. Such was our conundrum with GE Lighting's smart dimmer – the company didn't have a smart ceiling fan controller in its ecosystem. But that

GE Lighting's Cync Fan Speed Smart Switch features a similar industrial design to its smart lighting controls and lets users select four speeds for a connected ceiling fan.

changes with the Cync Fan Speed Smart Switch. The industrial design mirrors the dimmer for a consistent look, which is an important consideration if the products are to be installed side by side, and it lets you set four speeds for the ceiling fan it's connected to. Even better, you can group the fan with other GE Lighting smart home devices and schedule them at the same time. We're also happy to see the company dump its awkard-to-say C by GE branding in favour of the simple Cync.

HEX HOME SECURITY

Security cameras do a great job of spotting intruders – provided they step into the camera's field of view. The Hex Home Security system from Origin Wireless can sense a burglar no matter where they move inside your house. A Hex Command Hub and Hex Sense plug-ins blanket your home with Wi-Fi radio waves and then use AI to analyse how those waves are disrupted by people walking around. If you're not home, the units will sound an 80dB siren and the system will send an alert to your smartphone via your Wi-Fi network. You can tune the system's sensitivity so that your pets won't set it off and trigger a false alarm. Origin says it plans to offer an optional but inexpensive professional monitoring service plan that will dispatch the police if you can't be reached after an alarm is tripped. A kit adequate for a 1,500-square-foot home will arrive this spring for $180 (around £131).

The Origin Wireless Hex Command hub (bottom) and Hex Sense plug-in sensor (top).

Modelled after classic Japanese baths, Kohler's sophisticated Infinity Experience soaking tub features an infinity edge, a fog emitter, an aromatherapy diffuser, and other high-tech features.

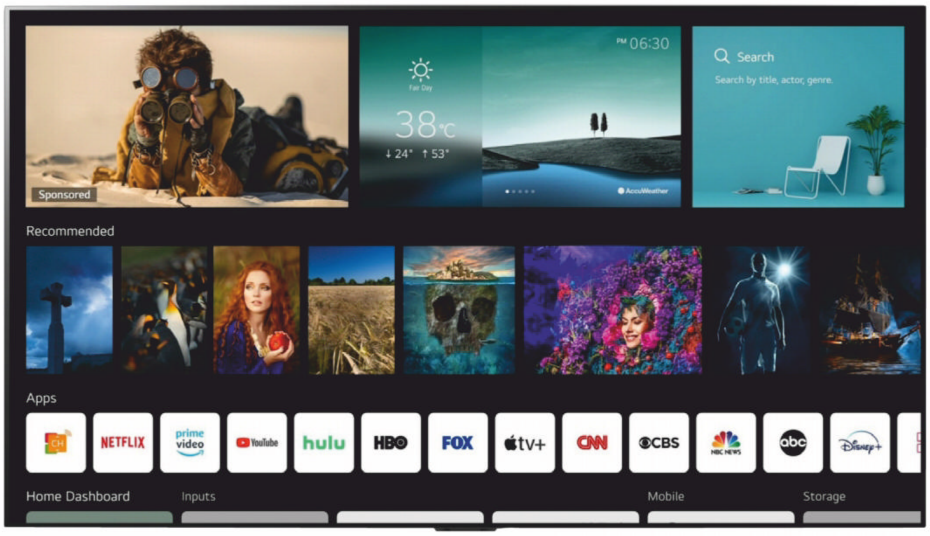
KOHLER INFINITY EXPERIENCE SOAKING TUB

After living through 2020, we're ready to take a long, luxurious dip in Kohler's extravagant Infinity Experience tub. A member of Kohler's line of Japanese-style Stillness Bath soaking tubs, the top-of-the-line, 48x48in Infinity Experience features an infinity edge, an aromatherapy diffuser, and an 'Experience Tower' that can dispense lavender, peppermint, or other essential oils, complete with a moody fog that floats over the water. A Hinoki wood moat surrounding the tub catches the water that flows over the edge; the water is then reheated and pumped back into the tub. Expect the $15,598 (around £11,400) Infinity Experience to ship in October.

LG ECLAIR SOUNDBAR

We're all for big, bold soundbars crammed with drivers galore, but we're even more impressed by pint-sized soundbars that still manage to pack a punch. While we haven't heard the 11.7in-wide Eclair in action, it certainly looks good on paper: Not only are we

The LG Eclair is our favourite soundbar of CES 2021.



LG will be using WebOS 6.0 on its 2021 TVs.

talking Dolby Atmos and DTS:X support, but it also comes with a 3.1.2-channel driver configuration, which means the soundbar's height effects are achieved through actual up-firing drivers rather than virtualization. The diminutive Eclair also comes with a compact subwoofer that's designed for solid but not 'teeth-rattling' bass, while its rounded, fabric-covered design gives the soundbar a homey feel. Indeed, we think the Eclair might be a perfect soundbar for a bedroom, and the idea of watching a movie with Dolby Atmos while snuggled in bed sounds enticing.

LG'S NEW OLED TECHNOLOGY

Samsung, Sony and TCL all had impressive TV announcements this year, but it's hard to argue with OLED technology, and LG is the undisputed king in that category. The company announced an optimized OLED element that it says will serve up brighter and even more accurate colour for its 2021 model-year OLED TVs. The new tech might also mean these sets will be less susceptible to burn-in, the Achilles heel of OLED technology. We're also looking forward to seeing LG's QNED TVs that combine quantum dots and miniature LED backlighting (aka mini-LED), which could wind up delivering some of the deepest contrast you'll see outside of OLED. Meanwhile, a revamped Magic Remote gets a comfier design, dedicated Alexa and Google Assistant buttons and Magic Tap compatibility, which will allow you to connect NFC devices to your TV with a simple tap. Finally, LG's WebOS is graduating to version 6.0, complete with an updated interface and recommendation based on your viewing history.

LINKSYS AXE8400 WIRELESS MESH ROUTER

Belkin is leveraging the pristine 6GHz spectrum that the new Wi-Fi 6e standard

The Linksys AXE8400 Wi-Fi 6E router can operate a mesh network.

opens up to build what sounds like will be a supremely powerful mesh Wi-Fi network – although one node might be all that most of us ever need. Belkin says a Linksys AXE8400 router on its own can blanket a 3,000-square foot home with coverage. Those blessed with super-fast broadband connections will appreciate this router's 5Mb/s WAN port, and there are four gigabit LAN ports to support NAS boxes, media servers, and other hardwired network infrastructure. Smart-home dwellers, meanwhile, will be interested in the Linksys Aware service that's based on Origin Wireless' technology (described above). Be prepared to pay a heft early-adopter fee: a one-pack is expected to fetch $450 (around £330) when it goes on sale, while a two-pack will go for $850 (around £620) and a three-pack will set you back a cool $1,200 (around £880).

NETGEAR NIGHTHAWK RAXE 500 WI-FI ROUTER

The newly opened 6GHz frequency band and its 59 non-overlapping wireless channels is the new frontier of Wi-Fi, offering unprecedented wireless bandwidth with a minimum of latency. Netgear's batwing-shaped Nighthawk RAXE500 will be among the first Wi-Fi 6e routers to tap that spectrum, and

The Netgear RAXE500 promises to be a wicked-fast Wi-Fi 6e router.

Netgear says its three networks combined will deliver theoretical speeds up to 10.8Gb/s. The latest router in the Nighthawk line boasts a 1.8GHz quad-core processor, a 2.5Gb/s WAN port, the ability to aggregate two of its five Ethernet ports for 2Gb/s LAN or WAN connections, and two USB 3.0 ports. Slated to go on sale later this quarter for $600 (around £440), the Nighthawk RAXE500 could the perfect fit for gamers looking to cut latency to the bone; although for now, there are only a handful of Wi-Fi 6e clients with which it can connect.

Noopl works best with Apple's AirPod Pro wireless headphones.

NOOPL HEARING ENHANCER

Say what? Hearing loss is no joke once you hit the magic age of 40, but a new gadget debuting at CES could make for a more effective alternative to a hearing aid (or simply cupping your ear). Equipped with technology licensed from the National Acoustics Laboratory in Sydney, Australia, the Apple MFi Certified Noopl plugs into the Lightning connector on your iPhone or iPad, and it uses a triangular array of three beamforming MEMS (microelectromechanical system) microphones and a head-tracking system to amplify the sounds that are coming from directly in front of you, while also screening out background noise. Designed to work with Apple AirPods, the $199 (around £145) Noopl can also be used with any other headphones or microphones, provided you manually control the direction of the microphones using the Noopl app for iOS (an Android version is in the works, we're told).

OWL WIRED SMART SMOKE DETECTOR

We know smoke detectors can be smart, but can they also be sexy? The Owl

The Owl Wired is much more than a smoke detector. It can also alert you to the presence of carbon monoxide, monitor temperature and humidity, and sense motion and noise levels.

Wired is doing its best on that front, and it's coming pretty close. Owl Home is a new player in the smart home market, but their smoke detector looks poised to shake things up. It can warn you of smoke and carbon monoxide, of course, but it can also report the temperature and humidity levels in your home, monitor and analyse noises, and detect motion. It depends on AC power, but it has a backup battery that will keep it running for three months in the event of a blackout. And it connects to your Wi-Fi network, so that an Owl Wired in one room senses danger, the LED light ring and siren in all Owl Wireds you have deployed in your home will sound the alarm. It's expected to ship in October.

ROBOROCK S7 ROBOT VAC/MOP HYBRID

Roborock's new S7 isn't the manufacturer's first robot vacuum that

The Roborock S7 is a robot vacuum/mop hybrid that can differentiate between hard floors and carpet.

can also mop hard-surface floors, but it might be the best. Equipped with a sonic mopping system capable of varying anywhere from 1,650 to 3,000 times per minute (which helps the vacuum to cut through surface dirt and dried-on spills), the Roborock S7 can automatically lift its mopping unit when it senses that it's moved from a hard floor to an area rug or carpet, or when it docks at its charging station. Compatible with Alexa, Google Assistant, and Apple's Siri, the S7 also boasts a redesigned, floor-hugging brush that should do a better job of sweeping up dirt.

360
REALITY
AUDIO

Sony's 360 Reality Audio technology is one of the best new things to come to home audio in a while.

Sony's 360 Reality Audio

Sony introduced this technology in 2019 and has now enhanced it so that artists can have their live performances captured on video, with the soundtracks encoded with this technology that allows recording engineers to place instruments and vocals anywhere in virtual 3D space. The music can be played on specialized speakers or on any type of headphone. With headphones, Sony uses head-related transfer functions (HRTF) to simulate the sound coming from different directions. Sony's own headphones, however, give you the opportunity to customize the HRTFs for the shape of your ears. You snap photos of your ears and Sony's app analyses their shape and customizes the algorithm accordingly. Sony released a video of the Swedish singer/songwriter Zara Larsson performing live that was engineered in 360 Reality Audio, and you really get the sensation of being on stage with her and her band. It's very fun.

SAMSUNG
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Samsung's new Galaxy S21 line-up chooses refinement over reinvention

Slightly improved but a lot cheaper. MICHAEL SIMON reports

Last year's Galaxy S20 line-up was such a massive change that Samsung introduced a new naming scheme to hammer home how consequential the upgrade was. This year, the Galaxy S21 series refines that vision at much lower prices.

Samsung has launched three Galaxy S21 models in very similar sizes. The S21 and S21+ have 6.2- and 6.7in screens like their S20 predecessors, while the S21 Ultra is slightly smaller, 6.8 inches versus the S20 Ultra's 6.9in screen. The top and bottom bezels are a bit slimmer as well to create a near-all-screen look, but all three models are essentially the same size as last year's.

Galaxy S21

S21: 151.7x71.2x7.9mm
S21+: 161.5x75.6x7.8mm
S21 Ultra: 165.1x75.6x8.9mm

Galaxy S20

S20: 151.7x69.1x7.9mm
S20+: 161.9x73.7x7.8mm
S20 Ultra: 166.9x76x8.8mm

They also weigh quite a bit more than last year's models, even the S21, which is made of a 'specially reinforced polycarbonate material' (plastic) versus the Gorilla Glass Victus glass covering the S21+ and S21 Ultra.

Galaxy S21

S21: 171g
S21+: 202g
S21 Ultra: 229g

Galaxy S20

S20: 163g
S20+: 186g
S20 Ultra: 222g

The extra weight is likely due to the camera module, which is unlike anything you've seen on a smartphone. Rather than a floating rectangular or square array in the top left corner, like the iPhone or previous Galaxy phones, the camera module on the S21 is less of a bump and more of a bulge, seamlessly extending from the metal side frame. It even has a name: Contour Cut Camera housing.

Inside the array, you'll find the biggest upgrade for the S21. While you'll still find a triple-camera in the S21 and S21+ and a quad-camera in the S21 Ultra, the whole system has gotten an upgrade:

Galaxy S21/Galaxy S21+

Camera 1: Ultra Wide (120-deg) 12Mp, f/2.2
Camera 2: Wide 12Mp, F/1.8, OIS
Camera 3: Telephoto (Hybrid Optic 3X) 64MPp f/2.0 OIS, 30X Space Zoom

S21 Ultra

Camera 1: Ultra Wide (120-deg) 12Mp, f/2.Camera 2:
Camera 2: Wide 108Mp, F/1.8, OIS
Camera 3: Telephoto (Optical 3X) 10Mp, f/2.4, OIS
Camera 4: Telephoto (Optical 10X) 10MP, f/4.9, 100X Space Zoom

That's not a misprint. The S21 Ultra is Samsung's first dual-telephoto lens, which should provide a massive boost over the S20 Ultra's somewhat janky zoom capabilities. Like its predecessor, the S21 Ultra can zoom up to 100X thanks to Samsung's Space Zoom tech, but the addition of a 10X optical zoom lens should make a huge difference.

Night shots should also see a significant boost. While all three phones have 'enhanced processing' when shooting in low light, the S21 Ultra also brings improved noise reduction and 12Mp nona-binning technology to deliver what Samsung says is its "biggest leap yet in low-light photography".

A slew of other enhancements cut across all of the S21 models: 8K Snap, which lets you pull out still images from your 8K videos; Director's View, which allows you to see and switch among each of the cameras while shooting video; 60fps Super Steady, multi-mic recording, enhanced portrait mode; and more Single Take options, including slow-motion videos.

The S21's colour palette is somewhat muted this year.

THE USUAL UPGRADES

The S21 line-up will be using the Qualcomm Snapdragon 888 processor, debunking speculation that Samsung would be using its new Exynos 2100 chip instead. It should be plenty fast, but Samsung's vague description defined it as "the latest and most advanced smartphone chipset yet in a Galaxy for greater speed, energy efficiency, and advanced computing capabilities to support 5G connectivity and on-device AI".

While the three screen sizes on the S21 are largely the same as those on the S20, Samsung has tweaked things a bit. Most notably, S21 and S21+ have 'flat' Full HD+ (1080p) displays, leaving the S21 Ultra as the sole model with a curved 'Edge' screen with QuadHD+ (1440p) resolution. The S21 Ultra also offers a higher max brightness (1,500 nits) than the S20, along with a 50-percent

SAMSUNG
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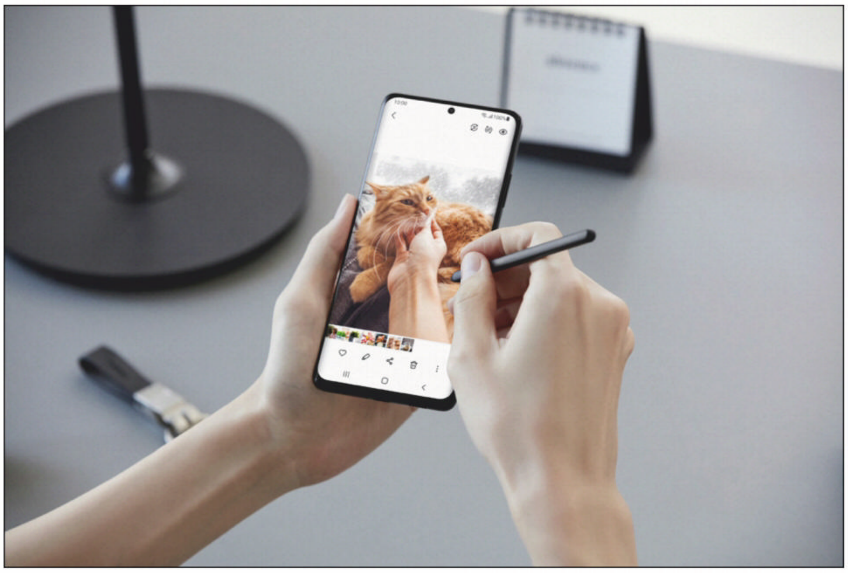
The Galaxy S21 has a plastic back but still looks very luxurious.

improved contrast ratio and a new Eye Comfort Shield feature that, according to Samsung, “automatically adjusts the blue light based on the time of day, content you’re viewing, and your bedtime”.

As has been rumoured, Samsung is bringing the S Pen to the Galaxy S line for the first time. It’s not quite the Note experience, though: only the S21 Ultra supports the stylus, and you’ll need to bring your own because Samsung isn’t including one in the box (though it will offer several cases that include S Pen slots, and you can already hear the third-party case makers scrambling to make more). It also doesn’t support any of the Bluetooth-enabled ‘Air’ gestures on the Note 20 – the Galaxy S21 Ultra’s S Pen is strictly for taking notes.

Like last year, all models have 120Hz displays, but this year they have adaptive refresh rates so the impact on battery life should be diminished. On the S21 Ultra, you’ll be able to use the 120Hz display with Quad HD+ resolution along with a wider 10Hz to 120Hz adaptive refresh range than the S21 and S21+ (48Hz to 120Hz) to eke out a little extra juice from the battery.



You can finally use an S Pen on the Galaxy S21 Ultra.

Speaking of the battery, the S21 and S21 Ultra have the same capacities as their S20 counterparts – 4,000mAh and 5,000mAh, respectively – while the S21+ gets a boost to 4,800mAh from the S20's 4,500mAh battery. You're also getting less RAM (8GB vs 12GB) with the S21 and S21+ versus the S20, while the S21 Ultra still starts at 12GB of RAM with a max of 16GB on the 512GB model. Sadly, however, Samsung has dumped the expandable memory slot, so what you get inside your phone is it.

You get Wi-Fi 6E with the S21 Ultra (and regular Wi-Fi 6 on the S21 and S21+) and Ultra Wide Band support with the S21+ and S21 Ultra for pinpoint location tracking that augment the new £30 SmartTags Bluetooth trackers. All three models get the full complement of 5G, along with Android 11 in the form of One UI 3.

Inside the box, you'll find the phone and a cable, and that's it. Following Apple's somewhat controversial move to dump the charger with the iPhone 12, Samsung is following suit, removing both the earbuds and the charger from the S21's box.

But the S21 line is a bit cheaper than the S20. The S21 will set you back £769 while the S21+ costs £949. The S21 Ultra has a starting price of £1,149. The Galaxy S21 is available for order now in violet, pink, grey and black, the S21+ in violet, silver and black, and the S21 Ultra in black and silver.

8 quirks to know about the Samsung Galaxy S21 before you order

It's not just the price that's been cut. MICHAEL SIMON reports

Samsung's Galaxy S21 is easily its best flagship bargain in years, with the latest flagship Snapdragon processor, a powerful triple-camera array, and a premium look and feel. But if you're thinking it's just an updated version of the S20 or even a smaller version of the new Galaxy S21+, there are a few things you need to know before you plunk down £769 to order.

1. THE SCREEN RESOLUTION IS FULL HD+ 1080P

Galaxy S buyers are used to getting the very best screens around. The Galaxy S20 brought a 6.2in Quad HD+ 3,200x1,440 Infinity-O Edge display with a pixel density of 563ppi and a 120Hz refresh rate. While the size is the same, you're not getting all that with the new Galaxy S21. Rather, you're getting a flat Full HD+ 2,400x1,080 Infinity-O display with a 421ppi pixel density and an adaptive 120Hz refresh rate. That's still an excellent display, of course, but it's definitely a step down from what Galaxy S buyers are accustomed to getting.

2. THE BACK IS MADE OF PLASTIC

Ever since the Galaxy S6, Samsung Galaxy S phones have been made entirely out of glass, and if you're buying a Galaxy S21+ or S21 Ultra, that's what you're getting. But with the S21, you're getting plastic – er, make that a 'specially reinforced polycarbonate material'. That's not necessarily a bad thing – plastic is less prone to shattering when dropped – but keep in mind that the S21 is just a little less premium this year.

3. THERE'S NO ULTRA-WIDE BAND CHIP

After first bringing it to the Note 20 Ultra for quick file sharing, Samsung is going all in on ultra-wide band. Alongside the Galaxy S21, Samsung launch a new line of SmartTags that work with the UWB chip to precisely locate lost objects. But if you get the S21, you won't be able to take advantage of it – only the S21+ or S21 Ultra have the UWB chip.

The Galaxy S21 has a plastic back that only looks like glass.

4. IT HAS LESS RAM THAN ITS PREDECESSOR

When Samsung launched the Galaxy S20 line, it was a performance beast, with a whopping 12GB of RAM standard across all three phones. Granted you might not have needed all that memory, but if there's anything we've learned from Samsung phones it's that they tend to get bogged down over time, so the extra RAM will definitely help keep things running smoothly. But on the Galaxy S21, you're only getting 8GB with no option for 12GB.

The S21 has 128GB or 256GB of storage and that's it.

5. IT DOESN'T SUPPORT WI-FI 6E

It might seem like only yesterday when Wi-Fi 6 arrived, but the next generation is already here. Wi-Fi 6E offers faster speeds and higher capacity to reduce latency and bottlenecks, and the Galaxy S21 phones are among the first to feature what is soon to be ubiquitous. But like UWB, it's only available on the S21 Ultra. The S21 sticks to basic Wi-Fi 6.

6. IT DOESN'T HAVE A MICROSD STORAGE SLOT

Samsung Galaxy S users have never really had to worry about how much storage is inside their phone thanks to the addition of a microSD memory card slot in the SIM tray. It's been a staple of the Galaxy S since the first phone landed in 2010, but the Galaxy S21 doesn't have one. So if you're buying one, you might want to upgrade to the 256GB model.

7. IT'S KIND OF HEAVY

The Galaxy S21 is the same size as the S20 it replaces and dumps the glass back for a plastic one, so you'd expect it to be as light as the Pixel 4a. That's not the case. The Galaxy S21 weighs in at 171g, which is heavier than the S20 (163g), iPhone 12 (164g), and Pixel 5 (151g). We're not sure where the extra weight is coming from.

8. NO S PEN SUPPORT

The Samsung S Pen has always been the thing that separates the Galaxy Note from the Galaxy S, so it's a big deal that the S21 line-up supports Samsung's stylus, even if it's just for drawing and writing. But don't expect to break out your S Pen on the vanilla Galaxy S21. Samsung has limited stylus support to the S21 Ultra, so you'll be tapping away with your finger like usual.

With the Galaxy S21, Samsung has figured out the iPhone's secret: Value

Samsung thinks different and it pays off. MICHAEL SIMON reports

Apple isn't exactly known for its low prices. The iPhone X was the first handset to cost more than a thousand pounds, the wheels for the Mac Pro cost £400, and just last December it launched a £549 pair of AirPods. Heck, it sells a charger that isn't even very good for £129.

But when it comes to its phones, Apple consistently gets it right. It's true that the most expensive iPhone 12 tops out at £1,399, but for the most part, the iPhone 12 is very attainable, even with 5G and OLED displays across the board. When compared to the top flagship phones of 2020, in fact, the iPhone 12 slides in well under the average premium Android handset.

At £769, the iPhone 12 isn't cheap, but compared to a £1,179 phone like the Galaxy Note20 it seems like a bargain.

But with the launch of the Galaxy S21, it seems as though Samsung has finally caught on. After years of piling on features and specs in an effort to distance its flagship handsets from the iPhone, Samsung has fully embraced Apple's strategy with the iPhone, not just cutting the price to match the iPhone 12's price tag but also distilling the S21 down to its most essential parts in a sort of reboot of the lower end of the line.

LOWERING THE PRICE AND THE PARTS

Last year's entry-level Galaxy S20 started at £799 and brought a bevy of ultra-high-end features you couldn't get in the iPhone 11: 12GB of LPDDR5 RAM, 120Hz Quad HD+ screen, triple cameras, microSD storage, and so on.

It's not so much that the Galaxy S21 isn't a high-end Android phone, but like the iPhone 12, it makes certain spec-sheet compromises that add value without degrading the experience. There's a reason why Apple doesn't list specs for RAM, battery capacity, or clock speed in the iPhone spec sheet – they're unnecessary. Apple doesn't need to wow its users with specs. Rather, it strives to deliver the best possible iPhone experience with the bare-minimum parts.

And the S21 does something similar. Take a look at the specs compared to its predecessor, the S20:

Galaxy S21

Display: 6.2in Flat FHD+ Infinity-O Display (2,400x1,080), 421ppi, 120Hz
Processor: Snapdragon 888
RAM: 8GB
Storage: 128GB
Battery: 4,000mAh

Galaxy S20

Display: 6.2in Edge Quad HD+ Infinity-O Display (3,200x1,440), 563 ppi, 120Hz
Processor: Snapdragon 865
RAM: 12GB
Storage: 128GB
Battery: 4,000mAh

Aside from the storage and the battery, the S21 is a seeming downgrade from the S20, with less RAM and lower resolution. It's also made of plastic, versus the S20's all-glass design.

But to judge the S21 on its specs is to miss the point. Samsung has finally realized that the spec battle is a losing one. They built a phone that delivers on value rather than numbers. Some people will grouse about losing out on the best features but most people won't even realize their phone has fewer pixels or less RAM.

Quite frankly, they might not even notice that it's made of plastic. What they will notice is that it's cheaper than last year, the first time prices have decreased in years. They'll also notice that it looks the same as the S21+ and S21 Ultra, shares the same processor and software, and takes fantastic pictures.

That's another way Samsung has followed Apple's lead: the camera. Rather than increase megapixels or add lenses for the sake of it, Samsung has

Samsung still makes a family of phones, but the S21 is likely to be the most popular.

kept the same triple-camera hardware on the S21 as it had on the S20, instead working behind the scenes to deliver improvements in the most important areas: portraits and low-light photos.

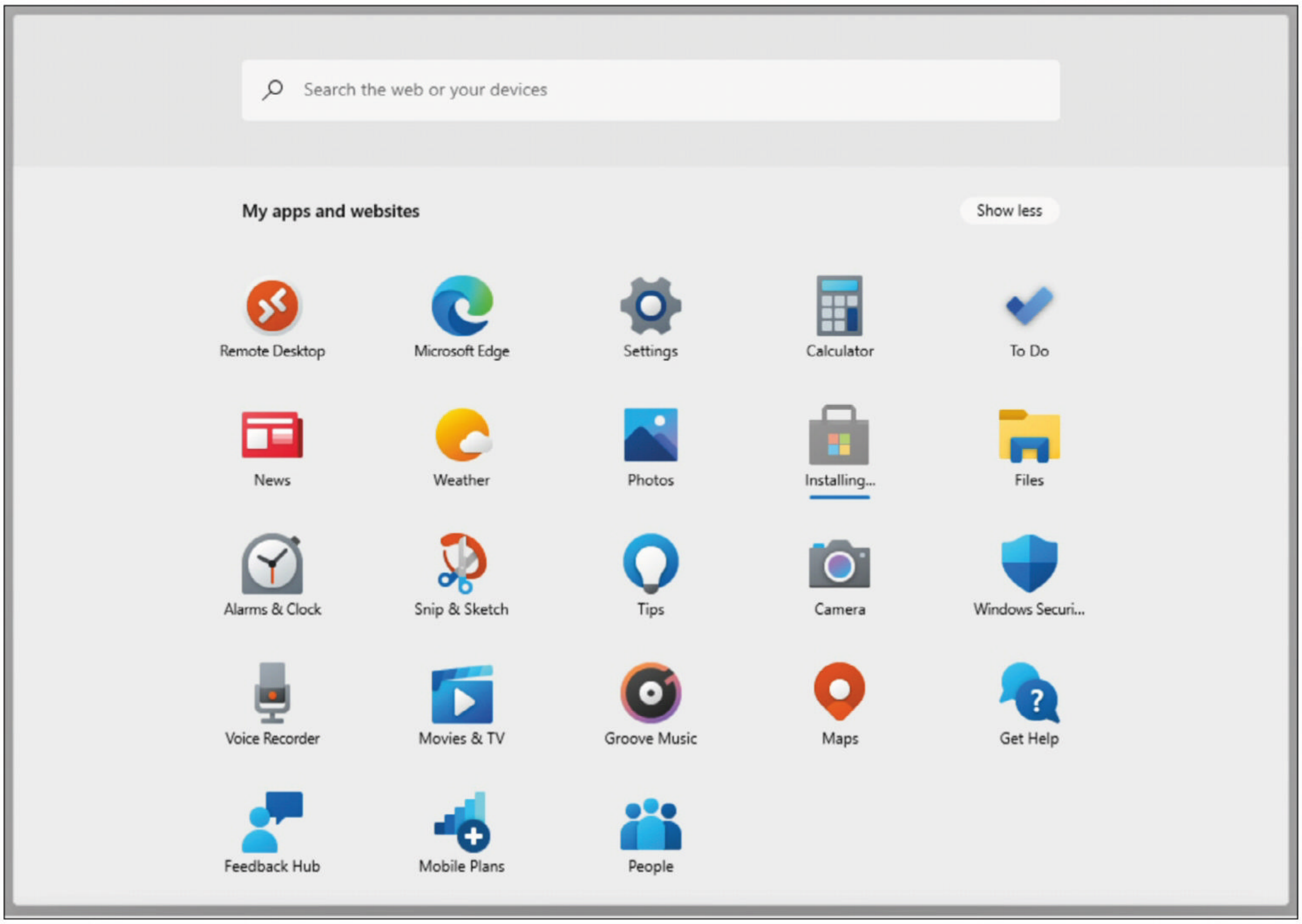
ANDROID iPHONE 12 IS HERE

For £769, the Galaxy S21 is truly Android's answer to the iPhone 12. More than the Pixel 5, OnePlus 8T, or even the Galaxy S20 FE, the S21 delivers a purely distilled premium Galaxy experience in a surprisingly affordable package, trimming corners rather than cutting them, and sacrificing very little of what people need.

And like the iPhone 12 Pro Max, if you want the best of the best, the Galaxy S21 Ultra still exists, with a Quad HD+ 6.8in display, 12GB or 16GB of RAM, and S Pen support. But for the masses, the S21 will more than suffice, especially when the price inevitably drops to £700 or less.

Previous Samsung Galaxy S phones were always among the best phones of the year, but they haven't seemed like a good value in years. The S21 changes that, hopefully for good. But mimicking what Apple does best with the iPhone 12, Samsung has created one of the best Android values in years, delivering premium looks and performance in an affordable package.

It's no secret that Samsung has been trying to replicate Apple's success for years, throwing all sorts of things at the wall to see what sticks. After 11 years, it might have finally found something that works.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Weather
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Camera
Windows Securi...
Voice Recorder
Movies & TV
Groove Music
Maps
Get Help
Feedback Hub
Mobile Plans
People

Windows 10X: Hands-on with Microsoft's new, simplified operating system

Microsoft's new Windows 10X continues to look somewhat boring, but that's okay. MARK HACHMAN reports

Microsoft's Windows 10X has leaked and it's boring. Well, it's designed to be boring. Simple, really – uncomplicated, straightforward, without the fuss and clutter of 'traditional' Windows. We wrote last year that Windows 10X now appears to be the new Windows 10 S (Windows 10 in

S Mode); after spending some hands-on time with the leaked build, we believe those impressions have been confirmed.

We'd like to say that Windows 10X has been graphically overhauled, with a variety of new features. However, the fact is that if you read our early Windows 10X coverage a year ago – when Microsoft was visualizing Windows 10X as the future of dual-screen devices – little has changed. (You can see our original Windows 10X hands-on video at fave.co./3o7DbcW.) Well, there's been one major tweak, of course: Windows 10X is now designed for single-screen PCs.

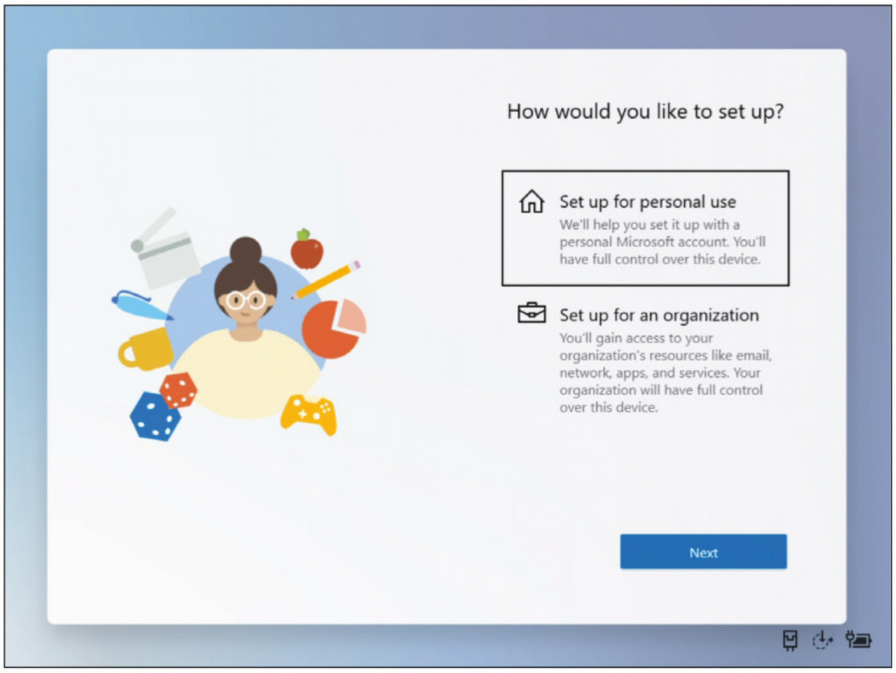
The leaked build, version 20279, can be run only under one of Microsoft's Hyper-V virtual machines for right now. While a virtual machine allows the OS to be isolated, or sandboxed, away from the rest of the operating system, the trade-off is speed. Windows 10X ran extremely slowly on a VM on a Surface Laptop 3, as you should expect from a beta build run on a virtual machine.

Remember, you probably won't have an opportunity to download and install Windows 10X yourself. The operating system is expected to be shipped preinstalled on low-cost PCs, most of which would presumably be designed for education or corporate environments.

STARTING UP WINDOWS 10X

The theme of simplicity begins with the set-up experience. There's no Cortana to assist you. Windows 10X opens with a brief flourish of the Windows logo before getting right to it.

If you're a fan of local accounts, don't buy a system with Windows 10X – the OS asked for a Microsoft account, and wouldn't take no for an answer. You do have the option of specifying whether Windows 10X will be used for home or

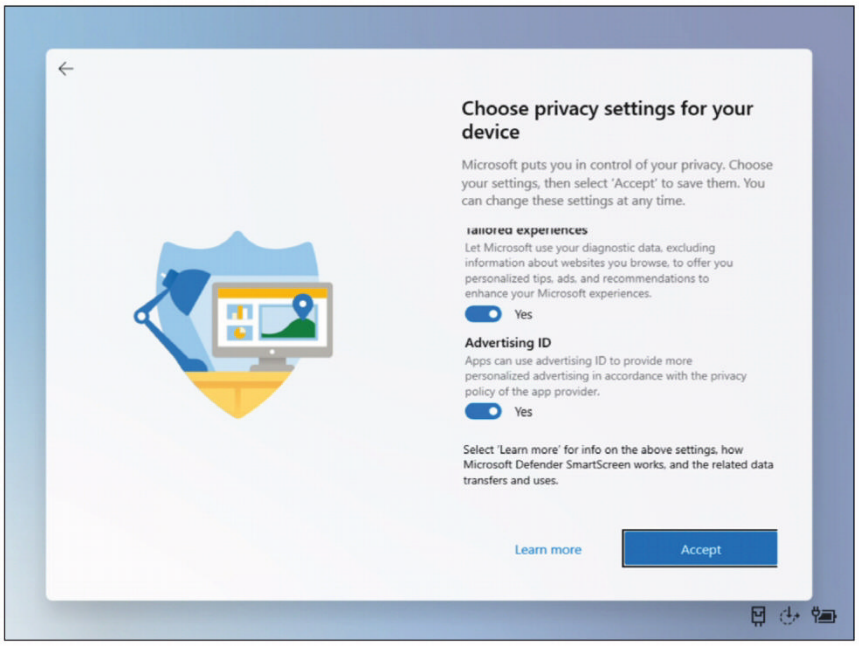


How would you like to set up?

Set up for personal use
We'll help you set it up with a personal Microsoft account. You'll have full control over this device.

Set up for an organization
You'll gain access to your organization's resources like email, network, apps, and services. Your organization will have full control over this device.

Windows 10X allows you to choose whether the PC will be used for home or business.



Choose privacy settings for your device

Microsoft puts you in control of your privacy. Choose your settings, then select 'Accept' to save them. You can change these settings at any time.

Tailored experiences

Let Microsoft use your diagnostic data, excluding information about websites you browse, to offer you personalized tips, ads, and recommendations to enhance your Microsoft experiences.

● Yes

Advertising ID

Apps can use advertising ID to provide more personalized advertising in accordance with the privacy policy of the app provider.

● Yes

Select 'Learn more' for info on the above settings, how Microsoft Defender SmartScreen works, and the related data transfers and uses.

Learn more
Accept

Some of the privacy options Windows 10X allows.

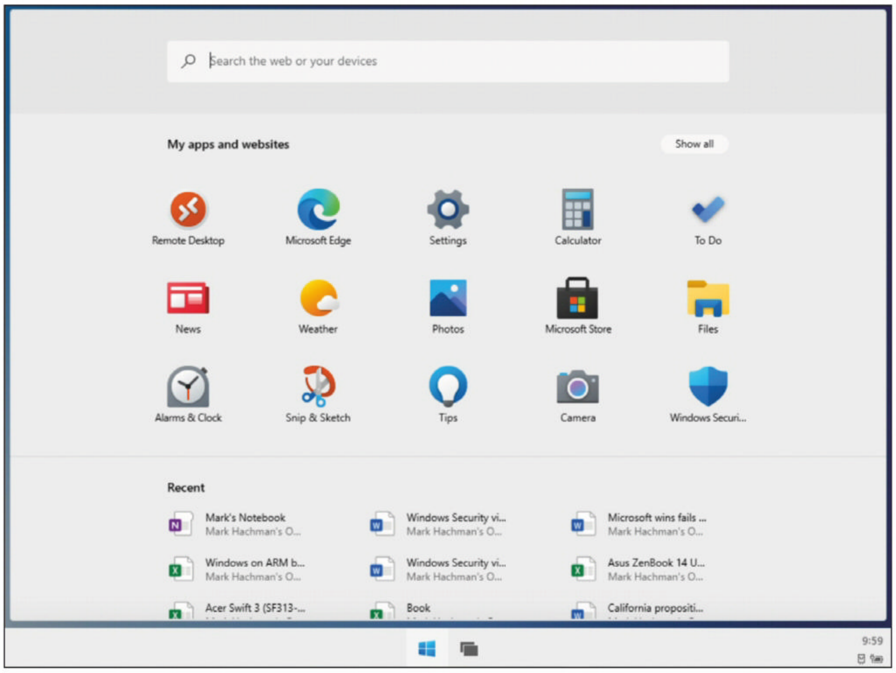
business, however, seemingly implying that you'll be able to buy a Windows 10X machine at retail.

Windows 10X actually goes to some pains to advise you of what data it collects, and allows you to select among a variety of privacy options available for Windows 10X, such as permitting targeted advertising. At least on our build, there seems to be none of the usual stalling while Windows checks for subsequent updates. Once you choose your privacy settings, Windows 10X ushers you into the main screen.

THE MAIN WINDOWS 10X UI

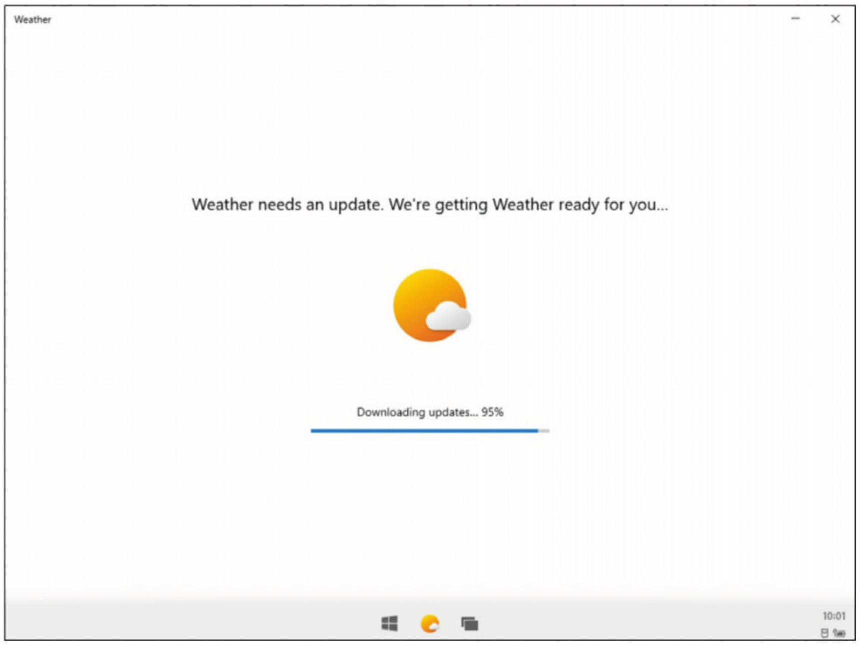
If you're unfamiliar with Windows 10X, the interface is admittedly somewhat of a shock.

The Start menu, for example, doesn't pop out from the bottom left-hand corner, as it does on Windows. There's no explosion of colourful Live Tiles, either. Start simply appears as a monochromatic icon on the taskbar on the bottom of the screen. When clicked,



Search the web or your devices
My apps and websites
Show all
Remote Desktop
Microsoft Edge
Settings
Calculator
To Do
News
Weather
Photos
Microsoft Store
Files
Alarms & Clock
Snip & Sketch
Tips
Camera
Windows Securi...
Recent
Mark's Notebook
Mark Hachman's O...
Windows Security vi...
Mark Hachman's O...
Microsoft wins fails ...
Mark Hachman's O...
Windows on ARM b...
Mark Hachman's O...
Windows Security vi...
Mark Hachman's O...
Asus ZenBook 14 U...
Mark Hachman's O...
Acer Swift 3 (SF313-...
Book
California propositi...
9:59

The default view for WIndows 10X: search on the top, apps in the middle, documents below.



Weather needs an update. We're getting Weather ready for you...

Downloading updates... 95%

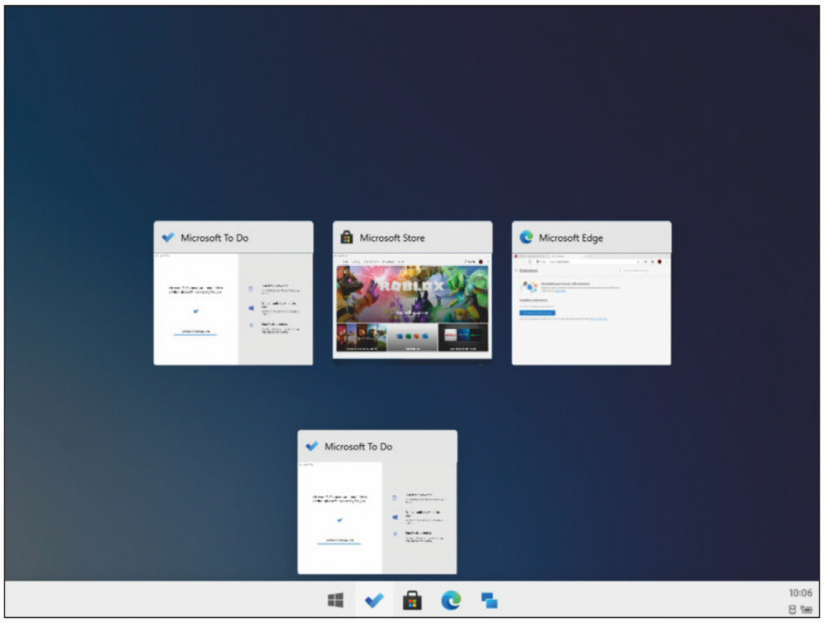
I encountered this sort of thing multiple times until the apps were downloaded. I'm willing to chalk this up to HyperV and an early build, though.

it slides up to reveal an 'app drawer' that looks very similar to what you'd see on a Chromebook.

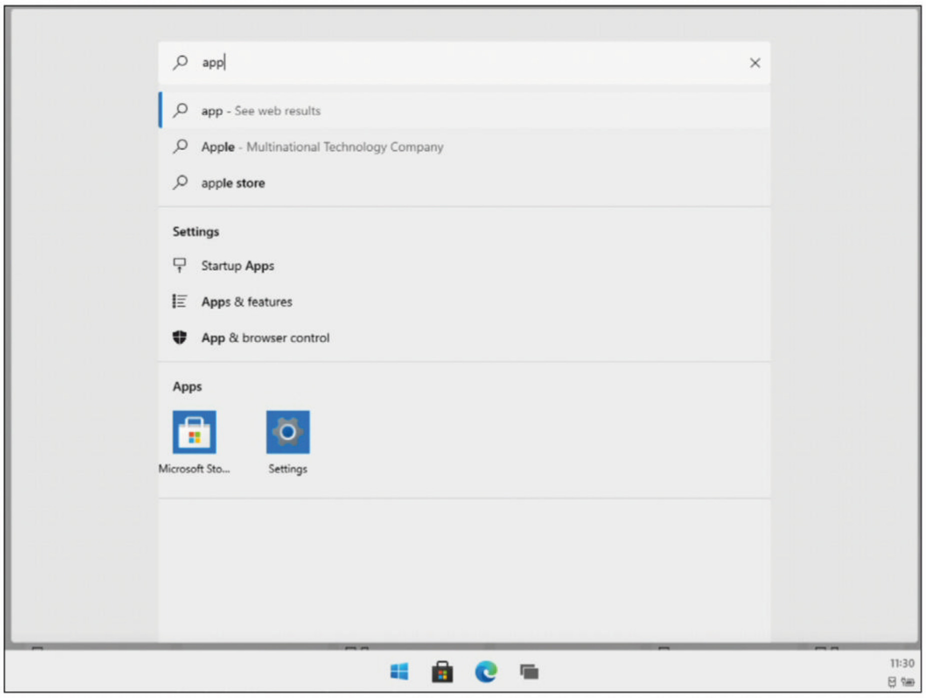
The apps that Windows 10X hides inside the drawer include the basics – Settings, Calculator, To Do, News, Weather, Photos, and so on. Apps that you might expect (OneDrive) don't appear, while apps that you likely wouldn't (Groove Music, which was disabled long ago) are included. Edge is the default (and apparently only) browser of choice, though my extensions and Favourites synchronized with my cloud account.

When I clicked an app like Weather, there was a prolonged delay while the app was downloaded and updated. We don't know whether a final version of Windows 10X will require this sort of frequent update when it's released.

Not surprisingly, Microsoft appears to limit the apps that you can download to just those from the Microsoft Store. I was able to download and install Candy Crush Soda Saga from the Store, but the 7Zip utility just seemed to disappear after I downloaded it and



Task View within Windows 10X.

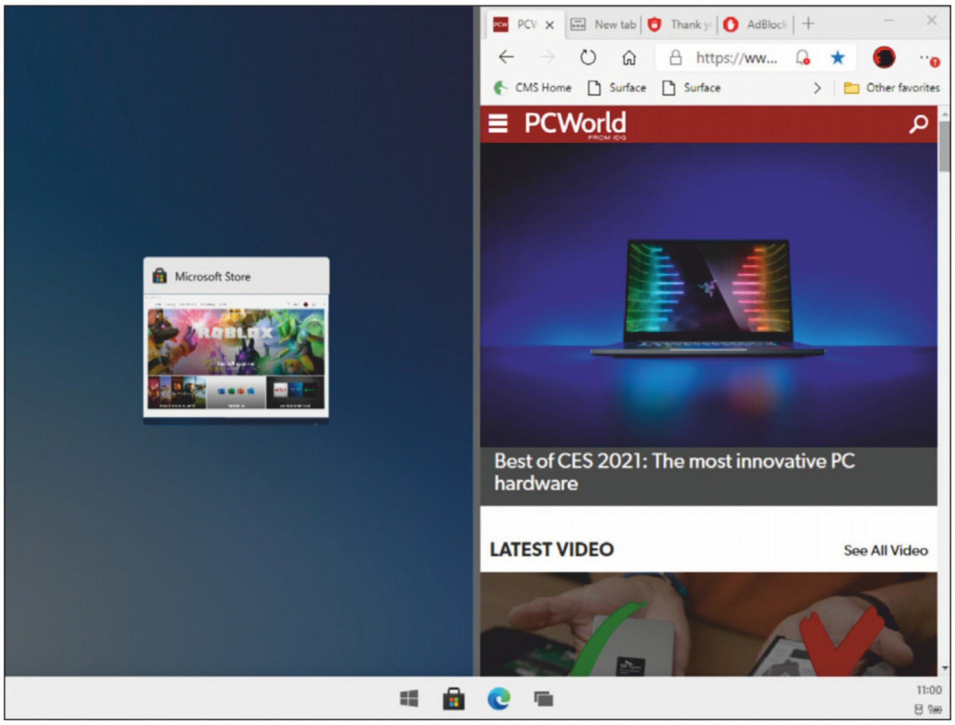

app
app - See web results
Apple - Multinational Technology Company
apple store
Settings
Startup Apps
Apps & features
App & browser control
Apps
Microsoft Sto...
Settings
11:30

The Windows 10X search box, and its results.

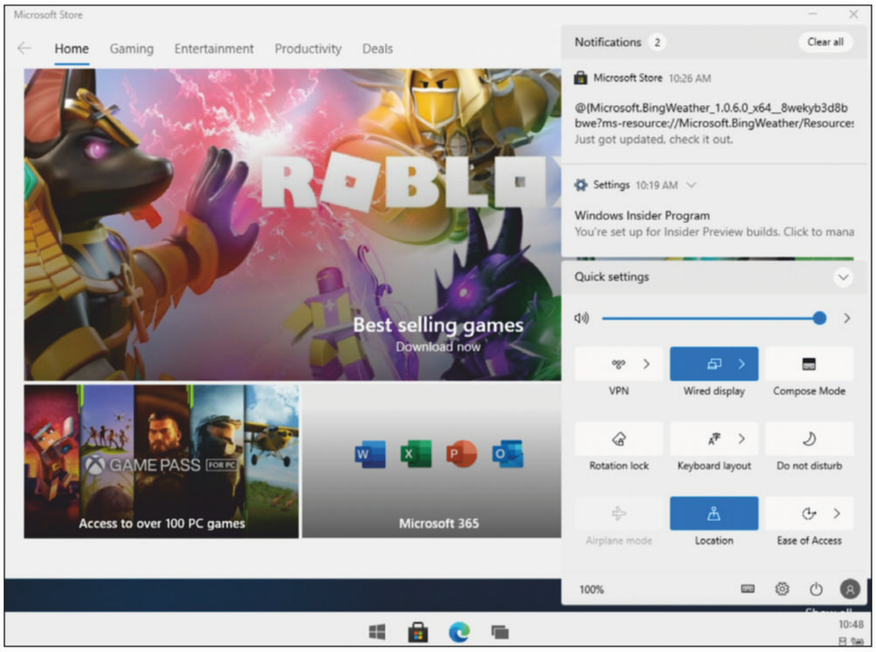
tried to install it. If you can't find an app, there's a massive search box that appears at the top of the interface on the Start screen. Typing a search term reveals results from the web and the Store and even local documents, if applicable.

Apps can be snapped to one side of the screen, or run in a full-screen mode. For now, Windows 10X doesn't appear to have the sophisticated four-corner Snap view that Windows 10 does. Microsoft has also retained Windows' Task View, which allows you to hop among apps by clicking on a small version of the icon, or typing the familiar Alt+Tab command.

Likewise, Windows 10X preserves the Settings menu, though with a slightly limited subset of available options, specific to the virtual hardware and the operating system. Windows 10X leaves the Action Centre in the lower right-hand


Microsoft Store
PCV
New tab
Thank y
AdBlock
https://ww...
CMS Home
Surface
Surface
Other favorites
PCWorld
Best of CES 2021: The most innovative PC hardware
LATEST VIDEO
See All Video
11:00

Snap works under Windows 10X, but it's limited to just two apps.


Microsoft Store
Home
Gaming
Entertainment
Productivity
Deals
ROBLOX
Best selling games
Download now
GAME PASS FOR PC
Access to over 100 PC games
Microsoft 365
Notifications 2
Clear all
Quick settings
VPN
Wired display
Compose Mode
Rotation lock
Keyboard layout
Do not disturb
Airplane mode
Location
Ease of Access
100%
10:48

Microsoft Store 10:26 AM

@{Microsoft.BingWeather_1.0.6.0_x64__8wekyb3d8b
bwe?ms-resource://Microsoft.BingWeather/Resource:
Just got updated, check it out.

Settings 10:19 AM

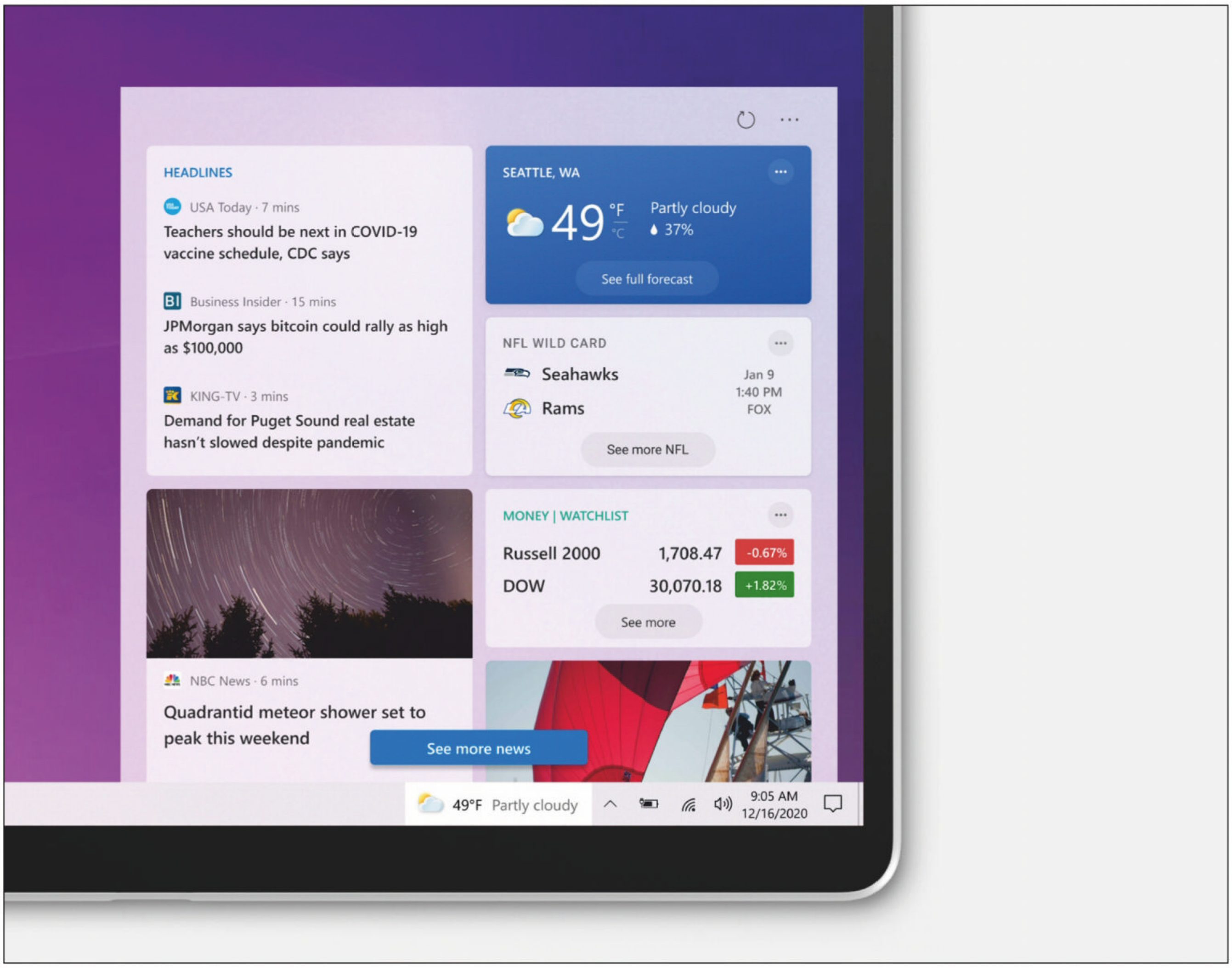
Windows Insider Program
You're set up for Insider Preview builds. Click to mana

The Windows 10X Action Centre is minimal, in keeping with the tone of the operating system.

corner intact. It, too, offers a simplified array of options. It's possible that more may become available once Windows 10X appears on shipping hardware.

To answer one last question: Windows 10 S offers an upgrade path to Windows 10 Home. Does Windows 10X? Not that I can see. Microsoft appears to have eliminated that escape hatch.

From what we've seen, the basic premise of Windows 10X appears to be this: It's a simplified Windows for those who need it – or for those designated to need it through an IT administrator. We'll know more about how Microsoft views Windows 10X once Microsoft makes it available in shipping hardware and to end users.



HEADLINES

USA Today · 7 mins
Teachers should be next in COVID-19 vaccine schedule, CDC says

Business Insider · 15 mins
JPMorgan says bitcoin could rally as high as $100,000

KING-TV · 3 mins
Demand for Puget Sound real estate hasn't slowed despite pandemic

NBC News · 6 mins
Quadrantid meteor shower set to peak this weekend

SEATTLE, WA
49 °F °C Partly cloudy 37%

NFL WILD CARD
Seahawks
Rams
Jan 9
1:40 PM
FOX

MONEY | WATCHLIST

Russell 2000	1,708.47	-0.67%
DOW	30,070.18	+1.82%

Microsoft unveils a new addition to the taskbar

Microsoft's latest Windows Insider build tweaks Storage Spaces and adds new features to the taskbar. MARK HACHMAN reports

Microsoft's latest Windows 10 Insider build adds a significant number of features to Windows 10, including weather and news widgets in the taskbar, new storage settings, and some additional command-line tweaks.

They're all part of Windows 10 Insider Build 21286, released in the Windows 10

Dev Channel. Technically, the features in this build are sample code, and there's no guarantee that these features will ever come to pass. The 'news and interests' taskbar addition looks polished enough, however, that it could potentially be part of a reported UI redesign due to arrive in Windows, known as 'Sun Valley'. Microsoft will make the new build available to all Insiders who subscribe to the Dev Channel.

TASKBAR ADDS 'NEWS AND INTERESTS' FEATURE

Microsoft already offers two apps within Windows that provide up-to-date information on news and weather – the News and Weather apps, naturally. Microsoft hasn't confirmed that these apps will be going away, but the company now says that the two will be combined into an 'integrated feed of dynamic content' that will be available from the Windows 10 taskbar. Based on a screenshot released by Microsoft, it appears that the taskbar will display the current weather, in a blurb that mirrors the taskbar's time display.

"Instead of switching between apps or your PC and phone to stay up to date with the news and interests you care about – seamlessly peek into your feed directly from the taskbar anytime you want throughout your day," Microsoft said in a blog post announcing the new features.

If this taskbar news widget sounds familiar, it should: Last April, Microsoft debuted the Microsoft News Bar, a widget that lives in your taskbar (or along one side of your display) and provided a stream of headlines. News Bar is still listed as a beta app, so it's possible that Microsoft is replacing it with this new taskbar widget. In any event, there are several ways to use Microsoft's MSN news service to receive free news, tailored to your interests, from sources and publications you specify. Microsoft's new widget just adds another.

It's possible that we're receiving one of our first looks at Sun Valley, the proposed Windows 10 UI redesign that has surfaced in the past few days. For one, a job listing (since edited) originally promised applicants that they would be hired to "deliver a sweeping visual rejuvenation of Windows experiences to signal to our customers that Windows is BACK". Windows Central originally reported on the proposed Sun Valley redesign, which could include changes to the Start Menu and Taskbar. Windows Latest has suspected that we'll see some early looks at the Sun Valley UI in the current Windows feature release, known informally as Windows 21H1, though a more formal roll-out of Sun

Valley is expected in the 21H2 release this autumn. The new taskbar widget could be a preview.

UPDATED STORAGE SPACES

You may be familiar with Storage Sense, a Windows 10 Setting that allows you to see which apps are gobbling up space on your hard drive or SSD. Storage Spaces is an offshoot of that, allowing you to create 'pools' of storage. Pools aren't associated with a specific physical drive, and can be used to create virtual drives that can span more than one disk. They're especially handy in creating a pool of storage that keeps a redundant copy of your data on a separate disk, to prevent losing data in a disk crash. It's very much like backing up your data to a cloud or another disk, but it's performed locally and automatically, without needing you to babysit the process.

Previously, this was all managed by the Windows Control Panel, and is now being handled by the Settings menu. Microsoft has, over time, continued to migrate functions from the legacy Control Panel into Settings.

TWEAKS AND OTHER CHANGES

Microsoft has also made a few small tweaks to other aspects of Windows. You can now perform commands automatically upon launching a Windows Subsystem for Linux distribution. You can accomplish this, Microsoft says, by editing the **/etc/wsl.conf** file in your distribution and adding an option titled 'command' under a section titled 'boot'.

Your clock's time zone is now changed automatically. If the PC is sure that you've physically moved time zones, your clock's time zone will now be reset automatically. If it's not sure, you'll receive a notification.

Windows File Recovery, a text-based Windows app, has been tweaked to include a pair of simplified recovery modes. It's necessary only if your disk has suffered file corruption, or if files have been accidentally deleted.

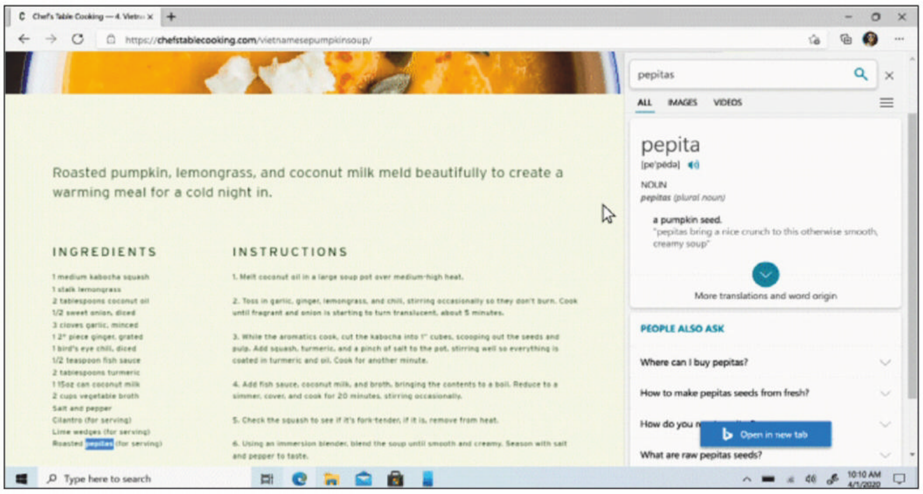
Microsoft has also fixed several bugs that shipped in previous versions of the Dev Channel code. A full list is available in the company's blog post at fave.co/3phU5Xm.

Edge will open your email from the new tab page

The ton of new features includes the new ability to compose and read email, new themes and knowledge cards. MARK HACHMAN reports

Microsoft's latest version of its Edge browser, in conjunction with Microsoft Bing, are rolling out some intriguing new features as part of the latest Microsoft Edge version 88 update. The most unique: Edge will now show a few new emails when you open a new tab page.

Edge 88 offers some nifty new security features, such as the long-awaited password generator. The company has also added some useful personalization and productivity features, including what could be my favourite: the Edge sidebar search function, which is now generally available.


Chef's Table Cooking — 4. Vietn...
https://chefstablecooking.com/vietnamesepumpkinsoup/
pepitas
ALL
IMAGES
VIDEOS
More translations and word origin
PEOPLE ALSO ASK
Open in new tab
Type here to search
10:10 AM
4/1/2020

Roasted pumpkin, lemongrass, and coconut milk meld beautifully to create a warming meal for a cold night in.

INGREDIENTS

1 medium kabocha squash
1 stalk lemongrass
2 tablespoons coconut oil
1/2 sweet onion, diced
3 cloves garlic, minced
1 2" piece ginger, grated
1 bird's eye chili, diced
1/2 teaspoon fish sauce
2 tablespoons turmeric
1 15oz can coconut milk
2 cups vegetable broth
Salt and pepper
Cilantro (for serving)
Lime wedges (for serving)
Roasted pepitas (for serving)

INSTRUCTIONS

1. Melt coconut oil in a large soup pot over medium-high heat.
2. Toss in garlic, ginger, lemongrass, and chili, stirring occasionally so they don't burn. Cook until fragrant and onion is starting to turn translucent, about 5 minutes.
3. While the aromatics cook, cut the kabocha into 1" cubes, scooping out the seeds and pulp. Add squash, turmeric, and a pinch of salt to the pot, stirring well so everything is coated in turmeric and oil. Cook for another minute.
4. Add fish sauce, coconut milk, and broth, bringing the contents to a boil. Reduce to a simmer, cover, and cook for 20 minutes, stirring occasionally.
5. Check the squash to see if it's fork-tender, if it is, remove from heat.
6. Using an immersion blender, blend the soup until smooth and creamy. Season with salt and pepper to taste.

pepita
[pe'pēdə]
NOUN
pepitas (plural noun)
a pumpkin seed.
"pepitas bring a nice crunch to this otherwise smooth, creamy soup"

Where can I buy pepitas?
How to make pepitas seeds from fresh?
How do you r...
What are raw pepitas seeds?

Sidebar search within Microsoft Edge.

Here's a list of the fun and productive features Microsoft is adding to Edge.

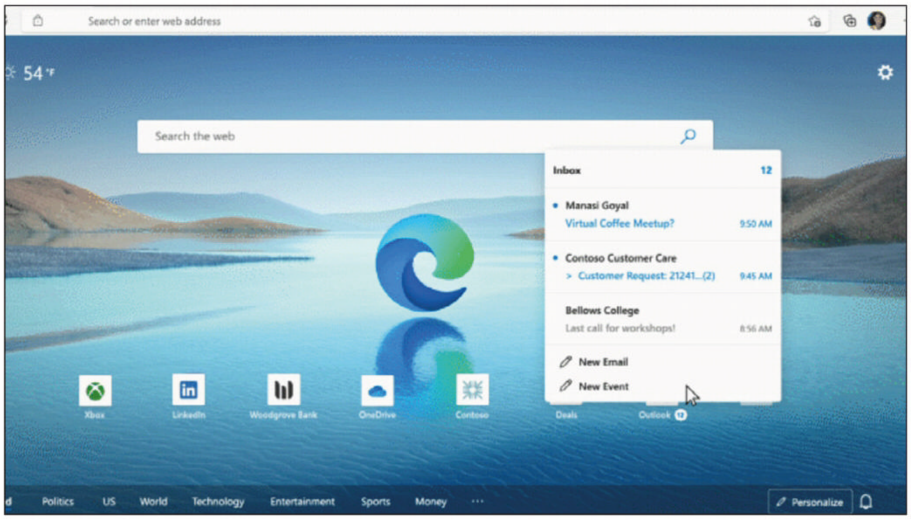
SIDEBAR SEARCH: GENUINELY USEFUL

While browser sidebars aren't unique to Edge at all, sidebar search has been thoughtfully integrated within Edge. Highlight a word, and right-click it to bring down the menu – then click Search in sidebar for the highlighted word or phrase. What's great about sidebar search is that it can give you a quick definition or explanation of the term, without the need to open a new tab, and to return to what you were doing. Sidebar search is thus a great way to stay focused on the task at hand, while also seeking out new information.

NEW TAB... EMAIL?

The option to see new email is something Microsoft hasn't offered before. This feature won't show up automatically – you'll need to perform a few quick steps to enable it. It also won't show up immediately, either, as Microsoft said that it will roll out soon.

Here's how it works. When you launched Edge for the very first time, you were offered the option to configure the layout as 'focused', 'inspirational' or 'informational' – basically tweaking the number of news and app tiles that Edge made available. (You can still


Search or enter web address
54 °F
Search the web
Inbox
12
New Email
New Event
Xbox
LinkedIn
Woodgrove Bank
OneDrive
Contoso
Deals
Outlook
Politics
US
World
Technology
Entertainment
Sports
Money
Personalize

Manasi Goyal
Virtual Coffee Meetup? 9:50 AM

Contoso Customer Care
> Customer Request: 21241...(2) 9:45 AM

Bellows College
Last call for workshops! 8:56 AM

Will opening an email within Edge prove popular?

make adjustments via the Edge menu, clicking the ellipsis icon in the upper right corner, dropping down to Settings, then opening the New tab page and adjusting the layout via the Customize button at the top.)

On the new tab page, you'll need to click the plus sign beside your current quick links, Microsoft says, then click Outlook under the suggested apps. You'll need to sign in to Microsoft Edge with the same account you use for Outlook to enable this feature, of course.

This new feature won't open Outlook.com or the Mail app. Instead, it will show your three most recent emails as well as an option to compose a new email. It's hard to say whether this particular feature will turn out to be popular, but Microsoft has made a habit of embedding related apps and functions where the company thinks you'll find them useful, and this is just another example.

HISTORY & TAB SYNC

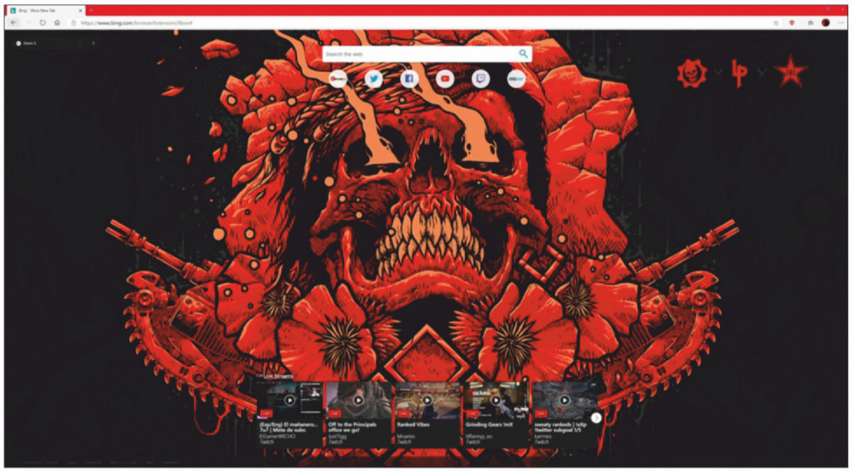
When Microsoft launched Chromium-based Edge a year ago, there were a few small holes. For example, while favourites and settings synced, of course, Microsoft was slower to sync other parts of the browser. Finally, Microsoft has filled in the gaps: the two outstanding 'tab history' and 'open tabs' now sync between the Edge browsers you may have open.

Both are available to Edge users on the desktop and mobile, as long as you're signed into a Microsoft account.

NEW EDGE THEMES FOR GAMERS AND MORE

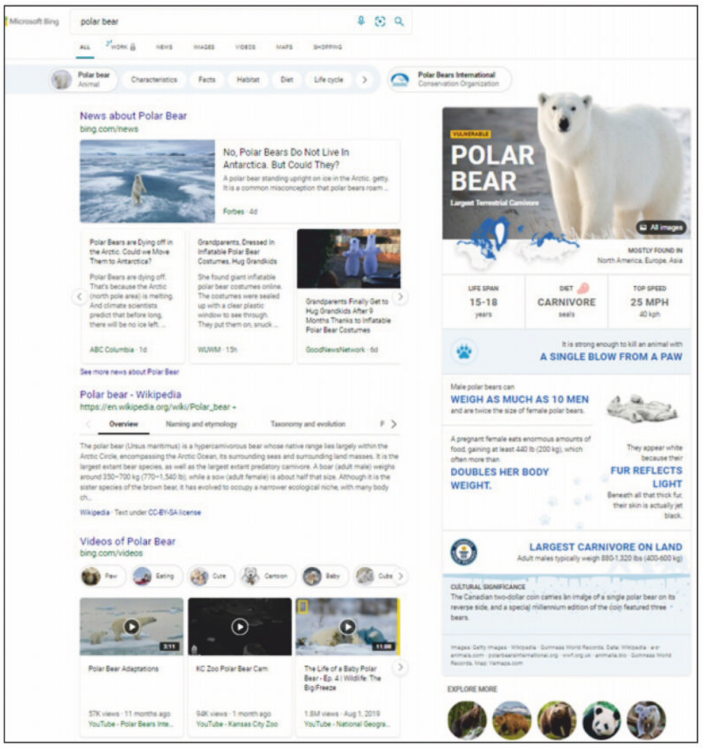
If you haven't learned how to personalize your PC, you really should – there's a wealth of absolutely gorgeous background themes available. Last year, Microsoft began extending this to Edge, with some frankly awesome Xbox-related backgrounds for a new tab opened within Edge.

Now, there are 24 new Edge themes from which to choose, including Xbox themes from your favourite franchises: Halo, Gears, Forza, Microsoft Flight Simulator, Sea of Thieves, Grounded, Ori and the Will of the Wisps, and more.



We're still partial to this awesome Edge theme.

"Of course, this is just the beginning," William Devereux, senior programme manager for Microsoft Edge, in a blog post. "We'll continue growing our collection of themes, and in the coming months we'll be adding support for anyone to submit their own themes. Soon, you'll even be able to select a theme colour directly from the Edge Settings as well."



News about Polar Bear
bing.com/news

No, Polar Bears Do Not Live In Antarctica. But Could They?
A polar bear standing upright on ice in the Arctic. getty. It is a common misconception that polar bears roam ...
Forbes · 4d

Polar Bears are Dying off in the Arctic. Could we Move Them to Antarctica?
Polar Bears are dying off. That's because the Arctic (north pole area) is melting. And climate scientists predict that before long, there will be no ice left. ...
ABC Columbia · 1d

Grandparents, Dressed In Inflatable Polar Bear Costumes, Hug Grandkids
She found giant inflatable polar bear costumes online. The costumes were sealed up with a clear plastic window to see through. They put them on, snuck ...
WUWM · 13h

Grandparents Finally Get to Hug Grandkids After 9 Months Thanks to Inflatable Polar Bear Costumes
GoodNewsNetwork · 6d

See more news about Polar Bear

Polar bear - Wikipedia
https://en.wikipedia.org/wiki/Polar_bear

The polar bear (Ursus maritimus) is a hypercarnivorous bear whose native range lies largely within the Arctic Circle, encompassing the Arctic Ocean, its surrounding seas and surrounding land masses. It is the largest extant bear species, as well as the largest extant predatory carnivore. A boar (adult male) weighs around 350–700 kg (770–1,540 lb), while a sow (adult female) is about half that size. Although it is the sister species of the brown bear, it has evolved to occupy a narrower ecological niche, with many body ch...
Wikipedia · Text under CC-BY-SA license

Videos of Polar Bear
bing.com/videos

Polar Bear Adaptations
57K views · 11 months ago
YouTube · Polar Bears Inte...

KC Zoo Polar Bear Cam
94K views · 1 month ago
YouTube · Kansas City Zoo

The Life of a Baby Polar Bear - Ep. 4 | Wildlife: The Big Freeze
1.8M views · Aug 1, 2019
YouTube · National Geogra...

POLAR BEAR
Largest Terrestrial Carnivore

MOSTLY FOUND IN
North America, Europe, Asia

LIFE SPAN	DIET	TOP SPEED
15-18 years	CARNIVORE seals	25 MPH 40 kph

It is strong enough to kill an animal with
A SINGLE BLOW FROM A PAW

Male polar bears can
WEIGH AS MUCH AS 10 MEN
and are twice the size of female polar bears.

A pregnant female eats enormous amounts of food, gaining at least 440 lb (200 kg), which often more than
DOUBLES HER BODY WEIGHT.

They appear white because their
FUR REFLECTS LIGHT
Beneath all that thick fur, their skin is actually jet black.

LARGEST CARNIVORE ON LAND
Adult males typically weigh 880-1,320 lbs (400-600 kg)

CULTURAL SIGNIFICANCE
The Canadian two-dollar coin carries an image of a single polar bear on its reverse side, and a special millennium edition of the coin featured three bears.

Expect to see more of these 'knowledge cards' within Microsoft Edge.

RECIPE CARDS THAT GET RIGHT TO THE GOOD STUFF

If you've begun cooking more at home, you may note that many recipes rattle off a personal anecdote or story, whether to add some personal flavour, or simply puff up the recipe page to gain influence on search engines. Some, however, at least let you jump straight to the recipe itself. Microsoft tries to go even further. If you search for a recipe on Bing, you'll see a list of 'cards' with the name of the recipe and a link to the site. Hover over them, however, and Microsoft will try to extract the recipe itself, or at least a list of ingredients and an estimated cooking time.

CARDS FOR CAROUSELS AND KNOWLEDGE, TOO

You'll see 'cards' of information crop up more, both in 'carousels' of related images that can be scrolled left and right, as well as redesigned knowledge cards that can appear as a sidebar.

These latter knowledge cards appear rather impressive, looking more like a throwback to the days of Microsoft's Encarta encyclopedia rather than a dry recitation of facts. It will be interesting to see how quickly these new, visually interesting knowledge cards will roll out, and how broadly they'll be applied.

Microsoft Surface Laptop Go

Price: £899 (inc VAT) from fave.co/2MfreV1 ★★★⯪☆

When the Surface range began life as a single 2-in-1 back in 2012, few could have imagined just how quickly Microsoft's hardware would expand. There are now a staggering nine product lines, with four brand-new devices launching in the past three years alone.

The latest of these is the Surface Laptop Go, a traditional clamshell device pitched as an affordable alternative to the flagship Surface Laptop 3. Microsoft is attempting to repeat the success it's enjoyed with the Surface Go line, which began life in 2018 as a cheaper Surface Pro and is now in its second generation.

With demand for laptops extremely high, it would appear to be a great time to launch a budget device. But is the money you save over the regular Surface Laptop enough to justify the inevitable trade-offs? Read on to find out.

DISPLAY

Let's start with arguably the most important part of any laptop – the

Get started
Surface

The display offers rich and vibrant colours and an excellent level of detail.

display. The Laptop Go comes packing a 12.4in LCD panel at a resolution of 1,536x1,024. It's a bit smaller than you'll be used to on a laptop, and falls just short of Full HD, but once you start using the device these potential drawbacks soon fade into the background.

Colours are rich and vibrant, offering an excellent level of detail. It also reached a maximum brightness of 310 nits in testing, making working outside a real possibility. You might struggle in direct sunlight, though.

Any loss of resolution over the 2,256x1,054 Surface Laptop 3 is barely noticeable here, although the smaller display can feel a bit restrictive at times. My workflow often involves having multiple windows open at once, I found myself only able to comfortably one at a time. I'd therefore feel much more comfortable using it as a personal device instead of one I relied on to get work done, but that's a matter of personal preference.

The 3:2 aspect ratio helps in that regard, giving a boxier look than traditional 16:9 displays and allowing more content to be displayed vertically. It's also worth drawing attention to the impressively slim bezels, which give the device a more modern look and feel than even the Surface Laptop 3.

Where you do lose out over the flagship device is the choice of screen sizes, so you'll have to be content with a 12.4in display unless you want to pay more. Touch support is still here, but without being a convertible I found its usefulness to be relatively limited.

DESIGN

As I alluded to above, the Laptop Go has a premium design which belies its relative affordability. The aluminium and polycarbonate blend is nothing out of the ordinary for modern laptops, but it looks extremely sleek and modern. The choice of materials also allows the device to remain impressively light – at just 1.1kg it's significantly less weighty than both Surface Laptop 3 models.

Aside from the display, the single most impressive thing about this laptop is its keyboard. Microsoft has managed to fit a full-size keyboard into a device that's under 11 inches wide, and the Laptop Go benefits hugely as a result.

Keys are tactile and responsive, offering an impressive amount of travel considering the slimline body. It's not as good as the Surface Book 3, but you have to consider that this device costs less than half the price in many cases.

However, the big thing you lose out on when compared to similarly priced rivals is backlit keys. That was little more than a minor inconvenience for me but might be an issue if you regularly work in low light. The one key that does light up is the power button, which doubles as a fingerprint scanner for password-free login. That's a feature you won't find on the Book 3.

The other biometric option is face unlock via the 0.9Mp webcam, which is also capable of outputting 720p video for the all-important video calls. I found it to be slightly clearer than your typical webcam, but certainly nothing to write home about.

This laptop has clearly been designed with the work from home crew in mind, though. Dual far-field studio mics allow for clear, crisp calling, while Dolby Audio speakers ensure audio output is just as impressive. The latter is slightly lacking in bass, but that's to be expected in this sort of form factor.

In order to make room for that keyboard, the touchpad is relatively small and a bit fiddly. I was able to move through Windows just fine, but everything seemed to take a bit longer than usual. There's also very little

Aside from the display, the single most impressive thing about this laptop is its keyboard.

Performance is in keeping with similarly-priced devices.

room to rest your palms while typing, which can make everything feel a bit cramped. One of those problems can be solved by switching to the Surface Mobile Mouse, which connects seamlessly and works extremely well if you're on a flat surface.

The range of ports is in line with most other Surface PCs. There's one USB-C, one USB-A, a 3.5mm headphone jack and Surface Connect for charging. Microsoft continues to persist with its proprietary charging solution, which remains fiddly and has the tendency to be dislodged relatively easily. Should the company ever switch to USB-C, we'd expect its flagship hardware to be among the first to adopt it.

The Surface Laptop Go is marketed as a more fun, accessible alternative to the Laptop 3, and that's reflected in the colour options available. The Platinum model I tested is joined by Ice Blue and Sandstone variants.

PERFORMANCE

Before getting into its performance, it's worth detailing the variation in specs and pricing between Surface Laptop Go models. All come with 10th-gen Intel Core i5 processors and UHD graphics, but the entry-level £549 model only pairs that with 4GB of RAM and 64GB of eMMC storage. With system files often taking up around 20GB, that gives you very little free space to play with. Stepping up to £699 gets you 8GB of RAM and a 128GB SSD, while doubling the storage on the model I tested costs £899.

Therefore, I can only comment on how well the top-spec Surface Laptop Go performs, and it's highly unlikely to be the same across all configurations. My daily workflow involves lots of Chrome tabs, Slack and occasional photo editing, and the Laptop Go was able to handle all that with ease. There were occasional hesitations when quickly switching between apps, but nothing that significantly affected my productivity.

The solid performance doesn't quite stretch to graphic-intensive tasks like gaming or video editing, but that's probably not a priority if you're considering this laptop.

As you can see from the below benchmarks, the Laptop Go is roughly in keeping with many similarly-priced devices. It looks to be a huge step up from the Surface Go 2 on paper, but it's worth remembering that I was only able to test the Intel Pentium Gold version of that device.

Geekbench 5 (multi-core)

Microsoft Surface Laptop Go: 3,440
Microsoft Surface Go: 977
Honor MagicBook 14: 4,802
Huawei MateBook D 14: 3,094
Acer Swift 3: 3,727

PCMark 10

Microsoft Surface Laptop Go: 3,392
Microsoft Surface Go: 1,823
Honor MagicBook 14: 4,463
Huawei MateBook D 14: 3,757
Acer Swift 3: 3,702

3DMark (Sky Diver)

Microsoft Surface Laptop Go: 5,757
Microsoft Surface Laptop 3: 7,571
Microsoft Surface Go 2: 3,211
Honor MagicBook 14: 9,079
Huawei MateBook D 14: 7,794
Acer Swift 3: 7,670

One thing I found particularly frustrating was the extremely loud fan noise. This kicks in even when performing the most basic tasks and sounds like a plane is taking off when starting a big download. With many laptops now sporting fanless designs, surely Microsoft could have introduced a more efficient cooling system. The device only ever gets slightly warm to the touch, but at what cost?

There's no need to talk in detail about the pros and cons of Windows 10 in a separate section, but it's worth noting the Laptop 3 ships running the operating system in S mode. This means you can't download software outside of the Microsoft Store, but you can easily switch to Windows 10 Home in Settings. Unless you're planning on giving the device to students or young children, it's something I'd highly recommend doing straight away.

BATTERY LIFE

Battery life is one area where the Laptop Go struggles slightly. Microsoft doesn't quote a specific capacity but claims the device can provide "all-day battery life" with up to 13 hours of typical usage.

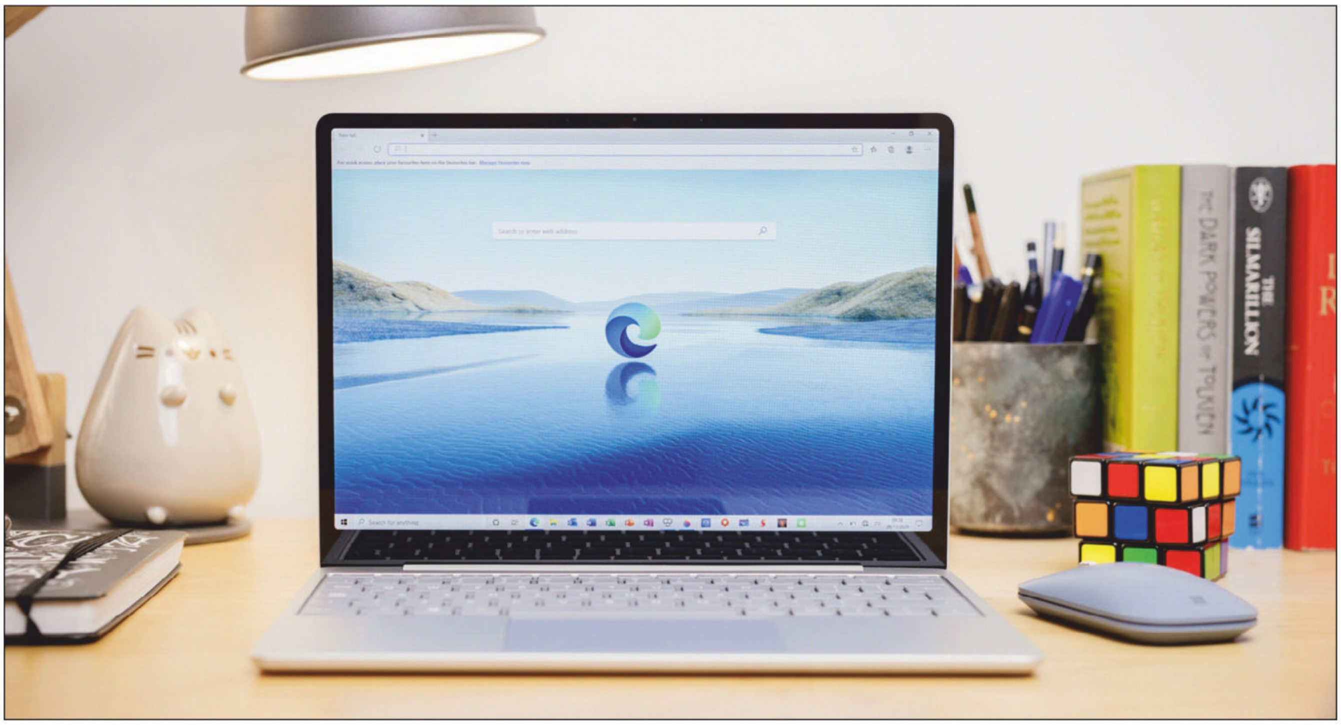
With the brightness set to 120 nits (63 per cent), I recorded 10 hours and 47 minutes of 720p video playback. That's around average among the laptops I tested, although it's highly unlikely you'll be staying on one task for the whole day.

In my typical workday, which involves lots of Internet browsing, email, word documents and Slack, I struggled to make through a full 7 hours without needing a top up. However, I had the device set to 'better performance', so you might be able to eke out a bit extra if you prioritize battery life.

Either way, if you want to use the Surface Laptop Go as your everyday machine, make sure you don't stray too far from a source of power. Speaking of power, using the included 39-watt adapter I was able to get 37 per cent of battery in 30 minutes. That means you're looking at around 2 hours 40, minutes for a full charge.

Battery life

Microsoft Surface Laptop Go: 10 hours, 47 minutes
Microsoft Surface Laptop 3: 9 hours, 4 minutes
Microsoft Surface Go 2: 14 hours, 3 minutes
Honor MagicBook 14: 13 hours, 31 minutes
Huawei MateBook D 14: 10 hours, 3 minutes
Acer Swift 3: 12 hours, 19 minutes



There's plenty to like about the Surface Laptop Go.

Fast charge (30 minutes)

Microsoft Surface Laptop Go: 37%
Microsoft Surface Laptop 3: 44%
Microsoft Surface Go 2: 29%
Honor MagicBook 14: 44%
Huawei MateBook D 14: 43%
Acer Swift 3: 44%

VERDICT

Considering the success of the Surface Go line, it was perhaps inevitable that Microsoft would release a cheaper clamshell device at some point. The Surface Laptop Go is exactly that, although it doesn't quite hit the mark.

The big factor is price, with the poor entry-level specs meaning you'll need to pay at least £699 for a model that's worth buying. Any more than 128GB of storage will set you back £899, putting it well out of budget laptop territory. What's more, the wealth of great options at this price point means the Laptop Go loses its big selling point of affordability.

Battery life is also a concern, with the device struggling to make it through a full working day during testing.

Nonetheless, there's still plenty to like about the Surface Laptop Go. Performance on the top-spec model I tested is solid, while including a great keyboard and display in such a slimline body is really impressive. The Dolby Audio speakers and dual studio mics also make for a great audio experience. There are plenty of laptop that also excel in these areas though, many of which are more affordable. There's definitely a market for a device like the Surface Laptop Go, but the strength of the competition makes this one hard to recommend. **Anyron Copeman**

SPECIFICATIONS

- 12.4in 1536x1024 PixelSense display, 3:2 aspect ratio
- Windows 10 in S mode (free upgrade to Windows 10 Home)
- Intel Core i5-1035G1 processor
- Intel UHD Graphics
- 4/8GB RAM
- 64/128/256GB storage (eMMC/SSD)
- 0.9Mp front-facing camera with face unlock
- Fingerprint scanner
- 1x USB-C
- 1x USB-A
- 3.5mm headphone jack
- Surface Connnect
- Wi-Fi 6
- Bluetooth 5.0
- Up to 13 hours battery life (quoted)
- 1.1kg
- 278.18x205.67x15.69mm

Lenovo Yoga Slim 7

Price: £899 (inc VAT) from fave.co/3p7yEbt ★★★★½

The Lenovo Yoga Slim 7 range includes a number of models powered by either Intel's 10th-gen Core processors, or AMD's Ryzen 4000 series APUs. Available to buy now, it follows in the footsteps of 2019's Lenovo Yoga S730, but it's not a direct successor to that laptop.

Designed for mobile workers, the Lenovo Yoga Slim 7 gives you get plenty of ports for your money, as well as the latest Wi-Fi 6 radios for fast connectivity. Dolby Atmos-tuned speakers mean for those times when you're not working, you can enjoy superior stereo sound when streaming movies and TV shows.

Finally, while the Lenovo Yoga Slim 7 is not a fully tricked out gaming laptop, or a heavy-duty machine designed for video editing, you do have the option of picking up models with dedicated Nvidia MX graphics processors, which will give you a boost in these departments, and allow for faster photo editing.

There is some confusion around the name as there's both a Yoga Slim 7 and a Yoga Slim 7i. The latter is for Intel processors but many retailers are just calling it the 7. Even our review sample with Intel has a sticker that only says 'Yoga Slim 7'.

DESIGN

The Lenovo Yoga Slim 7 is a very nice-looking laptop. As the name implies, it's a lightweight laptop aimed at people who work on the move, people who need something that can be quickly slipped into in a bag or case as they dash between meetings.

Instead of the usual boring black and silver colour options, here you can choose from sandblasted metal jackets in gunmetal green-grey 'Dark Moss', a rich wine/dark purple 'Orchid', or a slate grey textured fabric option, er, 'Slate Grey'. I took a look at the Orchid colour.

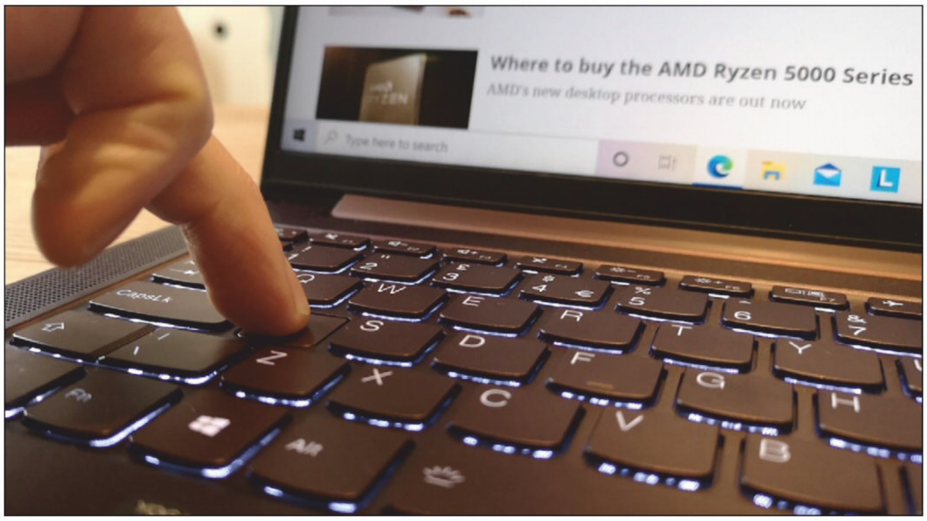
The Lenovo Yoga Slim 7's 14in display is framed by very slim bezels (3mm on the sides, 7mm on the top) which really makes the display pop out, and adds to the overall pared down and slender look. One of the tiniest 720p HD camera sensors I've seen sits top and centre.

The wide hinge allows for the Yoga Slim 7's screen to be easily adjusted, although there's a fair bit of wobble here. On the underside, rubberized feet lift the rear end of the deck up off of the desk slightly, allowing warm air to be pushed out of the vent by the twin fans.

Note that while this is a Yoga product, the Slim 7 doesn't have a 360-degree hinge to rotate the screen fully around, enabling different usage modes. The display does fold completely flat to a desk, though.

KEYBOARD

The keyboard is typical of the kind you see on Lenovo laptops, featuring the same curved keycap shape that you'll see here, and on creative convertibles like the Lenovo Yoga C740 and budget gaming laptops like the Lenovo IdeaPad Gaming 3i.


Where to buy the AMD Ryzen 5000 Series
AMD's new desktop processors are out now

The keyboard is typical of the kind you see on Lenovo laptop.

The keys fire back quickly, and the keycaps are nice and wide. Even if you have huge Jack Reacher-style supermarket chicken-sized hands, getting acquainted is no problem. The keycaps do feel a little thin, which makes me wonder how they may withstand a year or two of typing.

The Enter key also had a habit of getting caught against the deck when firing back up, which may not be a good sign, or it could be an issue specific to the unit I was sent.

Holding 'Function' and tapping the space bar lets you toggle the keyboard's backlight. The arrow keys are squashed in together in the bottom right, and also double up as 'Home', 'Page Up/Down', and 'End', again, when you hold down the 'Fn' key. It's not ideal but also not uncommon.

Flanking the keyboard are two micro-drilled grilles covering a pair of 2-watt Dolby Atmos-tuned speakers – more on these in a moment. There's even room for voice assistants Cortana and Alexa to hitch a ride here, if you're in the market for a laptop you can use to control your central heating and smart lighting.

Out of the box, the plastic-coated trackpad on the review sample was not very responsive at all, but luckily pushing the sensitivity to the max and increasing cursor speed solved this. It's not as fluid-feeling as, say, a MacBook Air's trackpad of course, but it's serviceable.

The lack of a fingerprint scanner is a noticeable absence here. The 720p HD camera does, at least, you unlock the Yoga Slim 7 and sign in to your Microsoft Account with Windows Hello facial recognition, if you want added protection.

DISPLAY

The review unit Lenovo sent me featured a 1080p Full HD display. A 4K option

The 4K model promises max brightness of 500 nits.

is available, but only on the slate grey fabric models.

Lenovo says that the Full HD display will give you maximum brightness of 300 nits, but I actually recorded 456 nits with the screen cranked all the way up. In real terms, this means that you'll be able to work practically anywhere with the Yoga Slim 7 – it's bright enough to cut through glare on a sunny day, and if you're working late or somewhere dark, you can dip things down, and turn on the keyboard backlight.

The 4K model promises maximum brightness of 500 nits, according to Lenovo. Both the Full HD and 4K displays are IPS (in-plane switching) type LCDs. My review unit exhibited OK viewing angles, with only mild discolouration noticeable at angles beyond 45 degrees horizontally, and vertically. It passes the Netflix bed-bound binge test, anyway.

Speaking of streamed content, the Lenovo Yoga Slim 7's speakers are really quite good. They support stereo sound, kick out clear treble sounds and quite decent bass too, considering their size.

As you might expect, at extreme volumes, there's some distortion, but really, if you need your music to be that loudly, you should probably be playing it through one of the best smart speakers anyway.

PERFORMANCE

The Lenovo Yoga Slim 7 range features 10th gen Intel laptop processors from the Ice Lake family. These are the Intel Core i5-1035G1, Core i5-1035G4 and Core i7-1065G7.

All of these are quad-core processors, although the i5-1035G4 and i7-1065G7 are the more powerful of the two, as they come with the more advanced Intel Iris Plus integrated graphics unit.

On top of this, you can pick up Lenovo Yoga Slim 7's with dedicated Nvidia graphics units, the GeForce MX330 or MX350. These will be of interest if you're thinking of getting a 4K Yoga Slim 7 with a view to doing some photo editing work or some not overly demanding gaming.

RAM-wise, you can pick up Yoga Slim 7's with 8GB, 12GB or 16GB of memory. Storage options will include Yoga Slim 7's with 256GB and 512GB SSDs.

Our review sample featured an Intel Core i7-1065G7, 8GB of RAM, and a 512GB SSD (467GB user-available), and so sits somewhere in the middle of the Yoga Slim 7 family.

I can say that for day-to-day work purposes, the Yoga Slim 7 sailed through basic office tasks. Chrome, with ten tabs open, including one YouTube playlist, didn't really see the Yoga Slim 7 lock up until about five hours of work – you should be restarting your browser after an hour or so anyway.

It took under 2 minutes to open 100 Jpegs (294MB in total) in GIMP. The twin fans, when they kick in, are not especially noisy, although I did feel the Yoga Slim 7 heating up a bit when watching something in bed or working with this on our laps – the Yoga Slim 7 likes to be used on desk surfaces.

I ran the usual series of benchmarks to give you an objective idea of how this compares to similar systems.

Geekbench 5 (multi-core)

Lenovo Yoga Slim 7: 4,512
Huawei MateBook 14 AMD (2020): 6,614
Huawei MateBook D 14 (2020): 3,094
LG Gram 14: 2,959
Dell XPS 13 (2020): 4,772
HP Envy 13 (2020): 3,685

PCMark 10

Lenovo Yoga Slim 7: 4,120
Huawei MateBook 14 AMD (2020): 5,095
Huawei MateBook D 14 (2020): 3,757
LG Gram 14: 4,245
Dell XPS 13 (2020): 3,934
HP Envy 13 (2020): 4,156

3DMark Sky Diver

Lenovo Yoga Slim 7: 9,327
Huawei MateBook 14 AMD (2020): 10,576
Huawei MateBook D 14 (2020): 7,794
LG Gram 14: 5,558
Dell XPS 13 (2020): 9,248
HP Envy 13 (2020): 8285

Battery life

Lenovo Yoga Slim 7: 11 hours, 50 minutes
Huawei MateBook 14 AMD (2020): 10 hours, 5 minutes
Huawei MateBook D 14 (2020): 10 hours, 3 minutes
LG Gram 14: 8 hours, 31 minutes
Dell XPS 13 (2020): 12 hours, 1 minute
HP Envy 13 (2020): 12 hours, 53 minutes

Battery life is excellent. I would usually finish a day with 40- to 50 per cent to spare, sometimes closer to 30 per cent if I listened to Bombay Bicycle Club on YouTube a lot.

Playing a 720p film on loop with brightness locked to 120 nits saw the Lenovo Yoga Slim 7 last for a Herculean 11 hours, 50 minutes.

Lenovo says that you'll get up to 14 hours with a Full HD Lenovo Yoga Slim 7, and up to 11 hours with a 4K one. While my real-world findings were not quite as amazing, close to 12 hours is pretty impressive – more than enough to see you through the day.

The Lenovo Yoga Slim 7 takes about two hours, 10 minutes to fully charge.

The Lenovo Yoga Slim 7 is bursting with connections.

From empty, after half an hour, expect 20- to 22 per cent, and 60- to 62 per cent after an hour. An hour and a half on the pump will get you hover at the 90 per cent mark.

CONNECTIVITY

As well as looking svelte and not being too heavy, the Lenovo Yoga Slim 7 is bursting with connections. You get two Type-A USB 3.1 Gen 2 ports and a microSD card reader on the right-hand side, and HDMI 2.0, and a Type-C USB 3.2 Gen 2 with Thunderbolt 3 on the right, plus the usual charging port (also Type-C USB-shaped) and a 3.5mm headphone/microphone combo jack. The only peripheral you'd likely want to shell out for here is an Ethernet adapter.

As with many laptops hitting shelves this year, the Lenovo Yoga Slim 7 features a cutting edge 2x2 802.11ax Wi-Fi 6 antenna. Using the free Wi-Fi Analyser app for Windows, I recorded wireless speeds between 721Mb/s and 1201Mb/s when working one metre away from a Netgear Orbi RBK750 router.

VERDICT

The Lenovo Yoga Slim 7 offers good performance, outstanding battery life, looks great to boot, and represents a nice alternative to the likes of the HP Envy 13 and Dell XPS 13.

At the time of writing, models with a bigger 512GB hard drive appear to be not as well-stocked as 256GB versions, meaning buyers might be tempted to look around for something with a bit more space in the boot.

Note there's no 360-degree hinge here, but as a 'normal' laptop, the Slim 7 is an excellent choice. Sure, it's missing a fingerprint scanner and Ethernet port but those are minor quibbles.

We'd recommend getting an AMD Ryzen 5 model for the best value and the Ryzen 7 is still very affordable if you need more power, including more powerful graphics than the Intel models. Thomas Newton

SPECIFICATIONS

- 14in Full HD (19,20x1,080) or 4K (3,840x2,160) IPS LCD panel
- Windows 10 Pro
- Intel Core i7-1065G7
- Intel Iris Plus Graphics
- 8GB LPDDR4X dual channel RAM (3200MHz)
- 512GB (PCIe NVMe)
- HDMI 2.0
- 1x USB 3.2 Type-C Gen 2/ Thunderbolt 3
- 1x USB 3.2 Type-C (Power Delivery 3.0)
- 2x USB 3.1 Gen 2
- MicroSD card reader
- 3.5mm headphone jack
- 2x 2-watt Dolby Atmos-tuned stereo speakers
- 720p HD webcam
- 802.11ax Wi-Fi 6
- Bluetooth 5.0
- 60.7Wh 4 cell lithium-polymer battery
- 320.6x208.18x14.9mm (metal), 321.6x208x15.4mm (fabric)
- 1.54kg (metal), 1.55kg (fabric)

REVIEWED: iPHONE 12 MINI • MAGSAFE DUO CHARGER

Macworld

FEBRUARY 2021

FROM IDG

THE HISTORY OF THE JET ENGINES
1932
1939

MACBOOK AIR (M1)

STUNNING PERFORMANCE FROM APPLE’S MOST AFFORDABLE LAPTOP

Huawei Mate 40 Pro

Price: £1,099 (inc VAT) from fave.co/3mULOHR ★★★☆☆

I've had the Mate 40 Pro a month now and I've been waiting for a promised software update before writing this review. In the meantime, Huawei has decided to sell off its Honor business, cutting ties completely in the hope that the sub-brand will survive and live on.

The problem, of course, is that both Huawei and Honor are hampered by the same trade restrictions which prevent them working with US companies. And this causes not just the absence of Google services but also limitations in which components Huawei can put in its phones.

What this means is that the Mate 40 Pro could never score well in this review. Not because of the hardware – that's exemplary – but because you can't get and use the apps you want to run on it.

We're not yet at a stage where Huawei phones don't even run Android, but having tried the workarounds to acquire and run the apps I need on a daily basis, it's just not good enough. Using the web versions of some apps, such as Gmail, is something that grates when you've just spent iPhone 12 Pro Max money, while the total absence of the three banking apps I use is downright unacceptable.

I could spend longer explaining which apps work (such as Twitter and Netflix) and which kind of work (the Nest app and Google Maps), but the fact is, there's inevitably going to be one or more apps – and games – you want/need which simply won't work on the Mate 40 Pro. It isn't Huawei's fault, but it is the reality of owning any Huawei phone post the P30 Pro.

The centrally positioned circle on the rear is unquestionably pleasing to look at.

DESIGN

There are elements of P40 Pro and Mate 30 Pro here: this is very much signature Huawei design. Despite its sheer size, measuring 162.9x75.5x9.1mm, it's not overly heavy at 212g. You get a clear TPU case in the box, which is nice, and a pre-applied screen protector to ward off those scuffs and scratches that you definitely don't want marring this marvellous metal sandwich. Of course, with a case fitted your hands miss out on some fantastic tactile sensations, such as the satin-finish rear and the way the front and rear curve smoothly to meet the polished metal frame.

Build quality is absolutely top-notch and the centrally positioned circle on the rear is pleasing to look at.

Another inclusion that's appreciated is the physical volume button, something missing on the Mate 30 Pro. This and the power button are easy to reach despite the phone's tall form factor.

DISPLAY

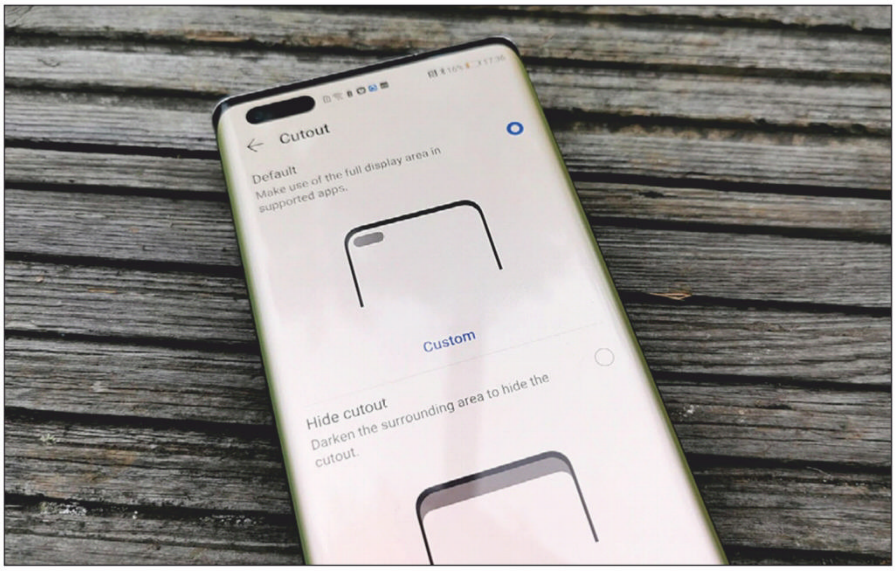
The 6.76in OLED screen has a resolution of 2,772x1,344 pixels – not the highest – and a refresh rate of 90Hz. Huawei boss Richard Yu said at the phone's launch that

The display is bright, sharp and great for watching video.

they could have made it 120Hz or even more, but the cost in terms of battery life was considered too great.

It supports HDR10 and is, by all accounts, an excellent display. It's bright, sharp and great for watching video.

Some may find the camera cut-out a bit too large: it houses a 13Mp camera and a depth-sensing camera (not a secondary wide-angle lens) and can occasionally get in the way of what's on screen. However, in the settings, you'll find the option to hide the cut-out, which puts a black bar across the top, becoming a thicker-than-usual status bar.


Cutout
Default
Make use of the full display area in supported apps.
Custom
Hide cutout
Darken the surrounding area to hide the cutout.

The camera cut-out houses a 13Mp camera and a depth-sensing camera.

PROCESSOR

The Kirin 9000 is a new chip that uses a 5nm manufacturing process. This makes it both fast and power-efficient and now has 5G built in.

One of the reasons I was waiting for a software update was because the Mate 40 Pro was refusing to install any benchmarking apps and even after an update did arrive, it still threw up the same errors.

This means I can't say for sure what the numbers are, but this is a problem we've faced with previous Huawei and Honor phones. The Mate 40 Pro feels very quick though and, of the games which are available, they run very smoothly.

The P40 pro has a proper speaker in the top edge.

CONNECTIVITY

There's no headphone jack, of course, but you do get IP68 water and dust resistance, USB-C and wireless charging, plus a dual-SIM tray which can accept one of Huawei's Nano Cards to expand upon the 256GB of internal storage.

Stereo speakers make a welcome return: Huawei phones went through a period of using the display as the earpiece for phone calls, which meant mono sound for videos, games and other stuff. Now there's a proper speaker in the top edge, as well as the bottom.

Internally, were you to pry open the device, you'd find Wi-Fi 6, Bluetooth 5.2, 8GB of RAM, a 3D face sensor, an in-screen fingerprint sensor and a 4,400mAh battery, among other things.

BATTERY LIFE

Since I've mentioned the battery, again, it's worth also saying that the Mate 40 Pro has 66-watt SuperCharge fast charging and that a 66-watt power supply is included in the box.

This will get the battery from 0 to 87 per cent in just 30 minutes, which is very impressive. There's also 50-watt wireless charging, for which you'll need a suitable Qi wireless charger. I only had Huawei's SuperCharge Wireless Charger Stand to hand, which tops out at 40 watts.

Battery life is another figure I couldn't get from benchmarking apps, but in general use, the phone lasted a good two days with light use. As ever, your mileage will vary depending upon how you use it, but it'll last a day, comfortably.

PHOTOGRAPHY

The biggest attraction for many Huawei flagships is the cameras and the Mate 40 Pro doesn't disappoint. Equally, it doesn't really offer anything you can't already

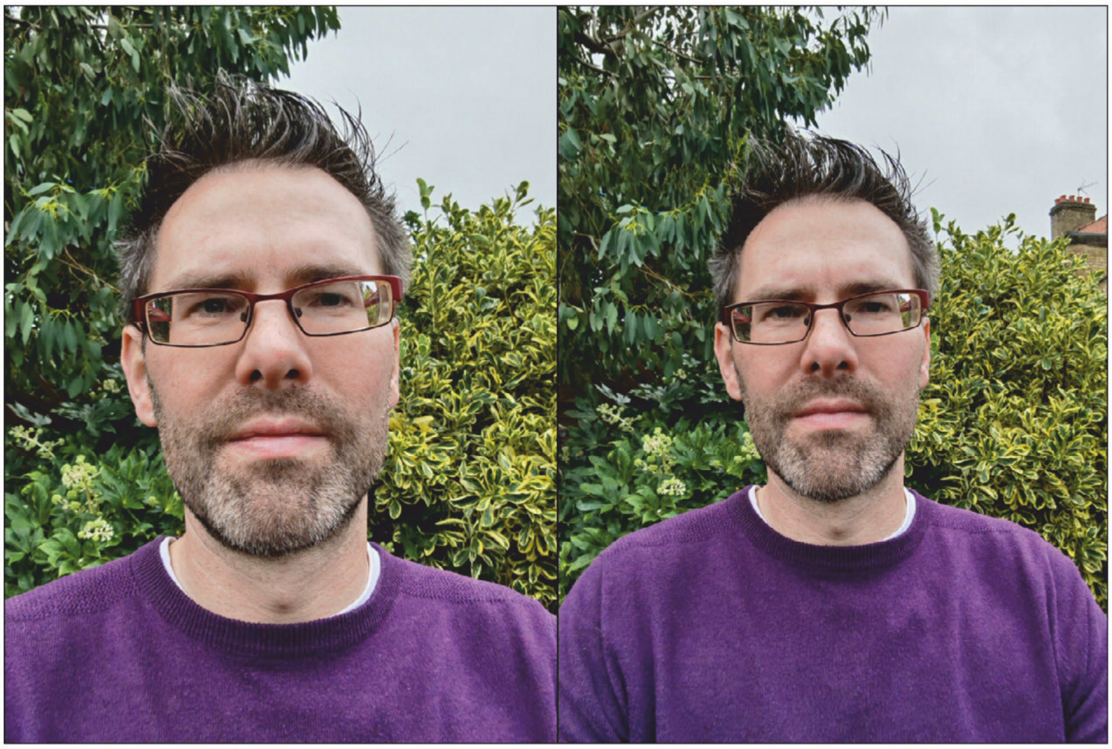
The ultra-wide cine camera takes images with no noticeable distortion.

get from other Huawei phones: a 5x telephoto zoom, a 50Mp main camera, a depth-sensing camera and an ultra-wide cine lens, much like the P4 Pro.

The latter has a 20Mp sensor, rather than the 40Mp unit found on the P40 Pro and P40 Pro+, while the 12Mp sensor behind the periscopic zoom is likely from the P40 Pro: results were very similar indeed with the occasional autofocus fail and soft resultant photos.

Overall then, photos are pretty much on a par with the P40 Pro, which is to say they're some of the best available from any phone. The biggest difference is that the ultra-wide camera, with a 100-degree field of view, has a nifty 'free-form lens' which removes the normal distortion you get with this type of camera, where street lamps and telegraph poles at the edges of photos become noticeably curved.

Around the front, there's a 13Mp ultra-wide cine camera with the same 100-degree FOV. This is a departure from the higher-megapixel units fitted to previous flagships. It defaults to a zoomed-in view for selfies but uses AI to detect when there are multiple



Left: Default selfies.
Right: Wide-angle selfie.

people in the frame and auto-switches to the wider angle.

13Mp is plenty for detail and shots are pretty sharp, too. Plus, with the addition of the ToF camera, you get better portrait selfies with nice, blurred backgrounds. It's even respectable in low light, although it's the rear cameras which sparkle when the sun goes down.

Even if you don't select the dedicated Night mode, you can get remarkable photos in dim conditions.

However, Huawei's low-light prowess isn't news. What is new is XD Fusion HDR video. This uses the extra power available in the Kirin 9000's ISP to process footage – including in 4K60 – for better dynamic range. With effective stabilization and autofocus, video is one of the Mate 40 Pro's strong suits.

SOFTWARE

Despite the problems with not being able to get certain apps, it is worth mentioning a few EMUI features. The Mate 40 Pro runs EMUI 11, which has a number of great new additions.

Specific to the Mate 40 Pro is what Huawei calls Eyes-On-Display or EOD. This differs from Always-On-Display (which is disabled by default) in that the new front camera system constantly monitors where your eyes are looking.

When it detects you're looking at the phone, it will turn on the AOD, meaning it can be off and saving battery power until you're looking at it. And it works surprisingly well. It's actually creepy: even if you've put the phone on a horizontal surface, the screen will still light up when your gaze falls upon it.

This is very much signature Huawei design.

There are also air gestures (as seen on the Mate 30 Pro) which let you navigate without touching the screen, multi-window – which lets you run two compatible apps at the same time – and the shortcut bar, which appears on the left or right when you swipe in from the edge and hold.

VERDICT

Typically, coming to a definitive verdict on a flagship phone is a difficult process. One has to weigh up a variety of factors including performance, battery life, cameras and a lot more. With the Mate 40 Pro it's simple. Don't buy it.

I'd love to recommend that you do: the hardware is fantastic and it takes amazing photos and videos. But the situation with apps means that warnings are plastered all over the place when you view the phone on retailers' websites. Even Huawei's own site forces you to click an 'Agree' button on a warning message relating to GMS before you can buy one.

For those wondering if they can 'hack' Google services onto the Mate 40 Pro and turn it into the phone of their dreams, it's not possible at the moment. Even if that changes, such hacks can be short-lived and at this price, it's not what you'd call a safe bet. Jim Martin

SPECIFICATIONS

- 6.76in (2,772x1,344; 456ppi) OLED, HDR10 display
- Android 10, EMUI 11, no Google Play Services
- Kirin 9000 5G (5nm) processor
- Octa-core (1x 3.13GHz Cortex-A77, 3x 2.54GHz Cortex-A77, 4x 2.05GHz Cortex-A55) CPU
- Mali-G78 MP24 GPU
- 8GB RAM

- 256GB/512GB storage
- Three rear-facing cameras: 50Mp, f/1.9, 23mm (wide), 1/1.28in, 1.22µm, omnidirectional PDAF, Laser AF; 12Mp, f/3.4, 125mm (periscope telephoto), PDAF, OIS, 5x optical zoom; 20Mp, f/1.8, 18mm (ultra-wide), PDAF
- Two selfie cameras: 13Mp, f/2.4, 18mm (ultra-wide); TOF 3D, (depth/biometrics sensor)
- Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, hotspot
- Bluetooth 5.0, A2DP, LE
- GPS with dual-band A-GPS, GLONASS, BDS, GALILEO, QZSS, NavIC
- NFC
- USB Type-C 3.1, USB On-The-Go
- Face ID; fingerprint scanner (under display)
- Non-removable 4,400mAh lithium-polymer battery
- Fast charging 66 watts
- 162.9x75.5x9.1mm
- 212g

OnePlus Nord N10 5G

Price: £329 (inc VAT) from fave.co/36NQWrJ ★★★⯪☆

The OnePlus Nord – the company's return to the mid-range market since its first outing back in 2015 – benefited from just as much (if not more) hype than the company has placed on some of its recent flagship launches.

It was preceded by a four-part documentary (which has since reached Amazon Prime Video), covering its development in the face of COVID-19, it spurred a dedicated Instagram account which still serves up related posts multiple times a day and the phone's gone on to become one of the most well-received mid-range handsets of 2020.

With all this in mind, when rumblings that the company would be expanding the Nord line to include more affordable devices, we were excited and intrigued to see how OnePlus would drum up interest around these new handsets before their big reveal. The problem is, for the most part, it didn't.

Of the 25 official Instagram posts made since the Nord N10 5G's announcement, only five make any reference to the N10, there's talk of OnePlus having just pulled the design and hardware from affiliated phone makers like Oppo and most recently, we learnt that it (and the N100) will only receive one software update and two years of security updates in their lifetime (compared to an additional year in both instances for the standard Nord and the company's flagships phones).

On the surface, it appears that OnePlus doesn't care anywhere near as much about the N10 5G as it does about the original Nord, instead hoping that the Nord name and the success of its namesake are enough to have fans of the brand part with their money.

So is this just an uninteresting smartphone sold on the reputation of the OnePlus brand more so than the actual hardware at play, or does the Nord N10 5G actually have enough character and ability to be a worthwhile purchase?

DESIGN

Giving OnePlus the benefit of the doubt and assuming that the N10 5G isn't based on one of BBK's other companies' devices (such as Oppo's, Realme's or Vivo's phones), this handset is a strange mix of design elements – both old and new – from the company's other mobiles.

The most obvious difference to recent OnePlus handsets is the return of a rear-mounted fingerprint sensor – a trait we haven't seen since early 2018's OnePlus 6. Its inclusion comes directly as a result of the phone's LCD-based display tech, which can't accommodate an optical in-display fingerprint sensor the way the original Nord or OnePlus 8 and 8T offer.

Meanwhile, a domino-style rectangular camera set-up – as popularized by Samsung's Galaxy S20 line – makes the N10 the second OnePlus phone after the 8T to sport such an arrangement; a trait we assume we'll see more of on future OnePlus devices, going by its inclusion here.

The most obvious difference to recent OnePlus handsets is the return of a rear-mounted fingerprint sensor.

Moving to a lower price point compared to the original Nord means you sacrifice a few key qualities; namely a glass back (here it's plastic), the company's signature alert slider and weaker water and dust protection (as denoted by the absence of a gasket around the phone's SIM tray). All that said, you will find a microSD expandability, although, in a strange way, this welcome addition is decidedly uncharacteristic for OnePlus.

The N10 has a bigger battery than the original Nord, but also comes with extra bulk to match. The bezel around the display is thick, especially when it comes to the 'chin' running along the bottom edge, while the 9mm-thick profile and nearly 200g weight (190g), render the N10 5G bigger and bulkier than expected.

That plastic back is curved to fit the hand nicely but with no case in-box, the eye-catching Midnight Ice finish is quickly covered by fingerprints and doesn't offer much in the way of grip in day-to-day use.

DISPLAY

OnePlus doesn't do small-screened phones and the N10 5G is a touch larger than the standard Nord (even before you take into account those bezels).

Its 6.49in panel uses LCD technology in place of OLED (as found on the original Nord) and you can tell, based on the drop in contrast and weaker colour reproduction. However, it still benefits from a high 90Hz refresh rate for smooth scrolling and motion, along with a perfectly sharp Full HD+ resolution set into a tall 20:9 aspect ratio.

It's worth noting that the display's refresh rate isn't adaptive, so it comes set to 90Hz out the box and is locked there unless you manually

WED, NOV 18
CLOUDY, 55°
12:31

The N10 5G's display is a touch larger than the standard Nord.

switch it down to 60Hz, which creates a more conventional viewing experience in an effort to prolong battery life.

OnePlus gives you a decent amount of control over the viewing experience, with colour temperature sliders for both general and Night Mode, a monochromatic Reading Mode and an Ambient Display option, despite no always-on setting (another limitation of LCD over OLED).

This is one of a dwindling number of phones to offer a headphone jack.

The one thing the screen set-up lacks is a one-handed mode – a long-standing omission on OnePlus phones that doesn't make sense considering their typically larger footprint. Its absence on the N10 5G is just as frustrating, with only larger-handed people comfortably pulling down the notifications shade with a single mitt, without fear of an already-slick phone slipping from their grasp in the process.

For everything the N10 5G's design omits compared to the original Nord, it benefits from a couple of additions too, namely a headphone jack and stereo loudspeakers. Audio quality across both is capable, with the stereo speakers being a particular highlight at this price point; offering fairly balanced, clear sound compared to some other stereo-capable phone loudspeakers.

SOFTWARE

While OnePlus is known for creating phones that deliver on performance, the company's skinned take on Android – Oxygen OS – is one of its greatest assets. Customized beyond stock to the point that it adds value, without feeling overwhelming, Oxygen OS is a rich user experience that's just as approachable to newcomers as it is long-time Android users.

Despite arriving after the OnePlus 8T, which boasts the latest and greatest Oxygen OS 11 (atop Android 11), the N10 5G sports version 10.5 atop Android 10. This might not seem significant, but considering the jump from Oxygen

OS 10 to 11 places a focus on better optimizing for one-handed usage, it's a shame that the company didn't work to make sure its latest user experience was available on its latest device.

Be that as it may, the N10 5G's software is still a pleasure to use and features useful augmentations over stock Android – like greater inbuilt customization, considered first-party apps that bring added value and a rich feature set – with entries like App Locker and Hidden Space for greater control over content and apps on your device.

Game Space and the included Fnatic mode are also on-hand to help avid mobile gamers, with resource optimization and notification suppression at the ready.

OnePlus's skinned take on Android – Oxygen OS – is one of its biggest assets.

It's worth reminding that despite the promise of an upgrade to Oxygen OS 11 (and Android 11) in the near future, unlike the rest of the current OnePlus line-up, both the N10 5G and the Nord N100 will only see a single major software upgrade in their lifetimes (while other OnePlus phones will receive at least two). Longer-term software support has often served as another great reason to choose a OnePlus device over certain Android competitors, so the absence of that benefit undermines the N10 5G in this regard.

PERFORMANCE

While the Nord N100 drops the performance ceiling even further, the N10 5G still serves as one of the company's most modestly-specified devices to date and one of the first phones out there to sport Qualcomm's conservative 5G-capable SoC – the Snapdragon 690, all backed by 6GB RAM and a fairly generous 128GB of internal storage.

In artificial testing the Snapdragon 690 offers plenty of compute power for everyday use but shows its weakness when it comes to graphical performance, falling behind devices like the more affordable Xiaomi Poco X3 NFC (see page 44).

The rear-mounted fingerprint sensor undermines an otherwise responsive user experience.

Geekbench 5 (multi-core)

OnePlus Nord N10 5G: 1,852
OnePlus Nord: 1,963
Xiaomi Poco X3 NFC: 1,764
Realme 7 Pro: 1,783
Google Pixel 4a: 1,640

GFX Manhattan 3.1

OnePlus Nord N10 5G: 23fps
OnePlus Nord: 34fps
Xiaomi Poco X3 NFC: 27fps
Realme 7 Pro: 25fps
Google Pixel 4a: 27fps

In real-world use, our main concern was that the lower-end internals would show up the Oxygen OS user experience. Luckily, in this regard – especially with the addition of 90Hz smooth motion – the N10 5G offers a pleasingly responsive user experience, however, it's imperfect – at least for the time being. Likely a result of early firmware instability, our N10 5G would sometimes lock up for a few seconds after waking the screen, rendering the last app opened useless for a few moments, while other features, like volume control and the Google Assistant, continued to function.

That rear-mounted fingerprint sensor also undermines an otherwise responsive user experience, taking as long as some in-display alternatives to get a read and sometimes refusing to work outright until the phone has been woken up with the tap of the power key.

These are strange quirks that detract from an otherwise smooth, responsive user experience but they're pervasive enough to sully the enjoyment of zipping around Oxygen OS on the N10.

BATTERY LIFE

The N10 5G's sizeable frame conceals a fairly sizeable 4,300mAh battery to match, which thankfully delivers on battery longevity.

Battery test

OnePlus Nord N10 5G: 11 hours, 37 minutes
OnePlus Nord: 11 hours, 26 minutes
Xiaomi Poco X3 NFC: 14 hours, 24 minutes
Realme 7 Pro: 12 hours, 5 minutes

Fast charge in 30 minutes

OnePlus Nord N10 5G: 64%
OnePlus Nord: 68%
Xiaomi Poco X3 NFC: 59%
Realme 7 Pro: 92%
Google Pixel 4a: 51%

While it only matched (and didn't exceed) the battery benchmark score achieved by the original Nord's smaller cell (both listed above), in real-world use it consistently doled out just over six hours of screen-on time (tested with a 5G SIM), which for most users should result in about a day and a half of general use without issue.

It's worth noting that dropping the phone's display down to 60Hz should result in even greater longevity, however, in day-to-day use, the N10 5G's current battery endurance with 90Hz enabled should prove ample for most users.

The N10 also happens to be the most affordable OnePlus phone that's still able to offer the brand's signature Warp Charge fast charging (with the Nord N100 dropping down to standard 18-watt speeds).

The updated Warp Charge 30T standard that OnePlus introduced on the OnePlus 7T series grants an initial rapid recharge and in testing brought the N10 5G's battery up to 64 per cent in just 30 minutes, with a full 100 per cent charge in an hour.

While OnePlus has introduced an even-faster 65-watt Warp Charge

Dropping the display down to 60Hz should result in even greater longevity.

standard as part of the OnePlus 8T's make-up, we wouldn't expect such a premium feature to arrive on a phone as affordable as the N10. This year's rumoured OnePlus Nord SE is, however, thought to tote this faster charging.

OnePlus' image processing has come on leaps and bounds in recent generations and you can see that hard work paying off when shooting via the main sensor

PHOTOGRAPHY

One interesting element first found on the Nord N10 5G is its primary 64Mp main camera (until now OnePlus cameras have topped out at 48Mp) – the Omnivision sensor is something of an unknown quantity in the smartphone space, so we were intrigued to see how it handled.

Shots are binned (combining four pixels' worth of data into one to iron out noise, shake, and so on) into 16Mp stills by default but you have the ability to capture at full resolution if desired.

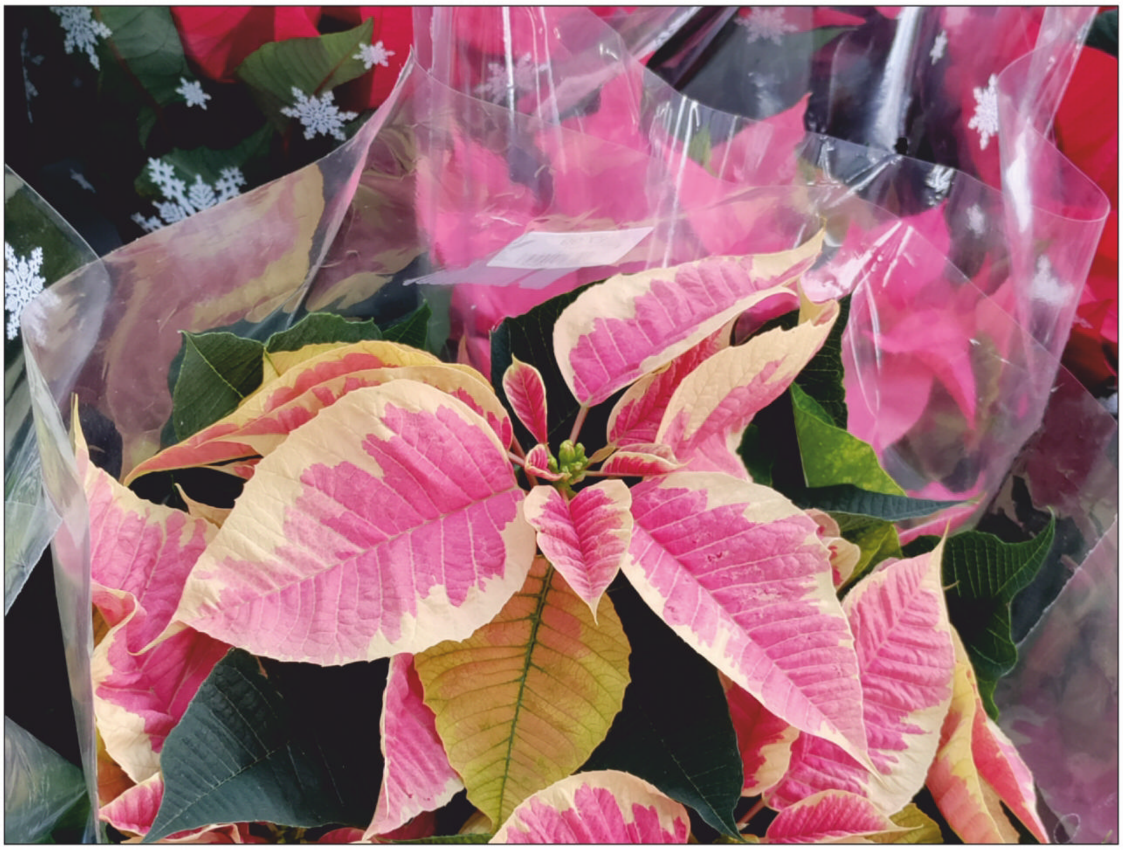
As for the quality of stills the N10 5G produces, it's a real mixed bag. OnePlus' image processing has come on leaps and bounds in recent generations and you can see that hard work paying off when shooting via the main sensor.

Colours appear natural and dynamic range isn't as narrow as you might assume; retaining more data in both the darkest and brightest areas of scenes. Fine details and bokeh appear a little muddy when pushing in but for sharing on social media most shots should do the trick.

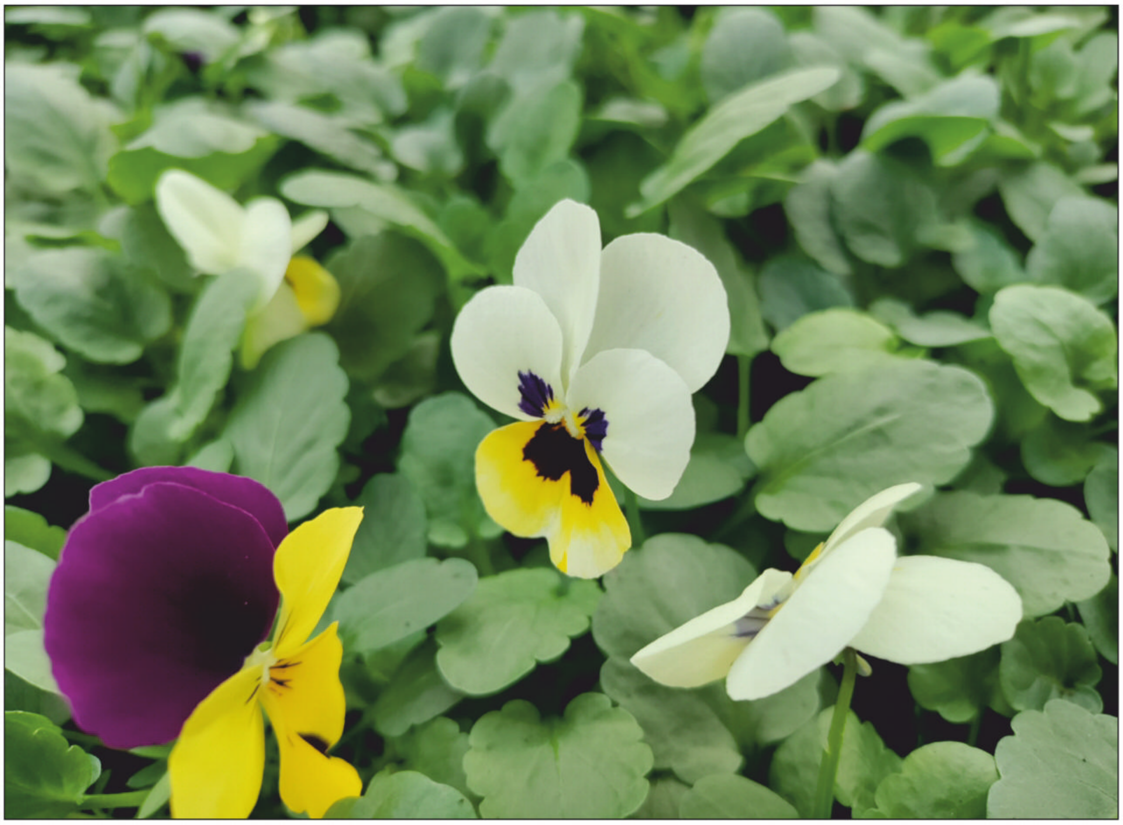
Consistency with the colour science when moving between the main 64Mp sensor and the phone's 8Mp ultra-wide snapper could be better, with the latter moving towards magenta with regards to white balance bias, while zooming is all-digital but thanks to the high-resolution sensor, still looks pleasingly sharp at the default 2x crop value built into the native camera app.

Colours taken on the N10 5G appear natural. Above is a photo taken at the default setting and below is an ultra-wide shot.

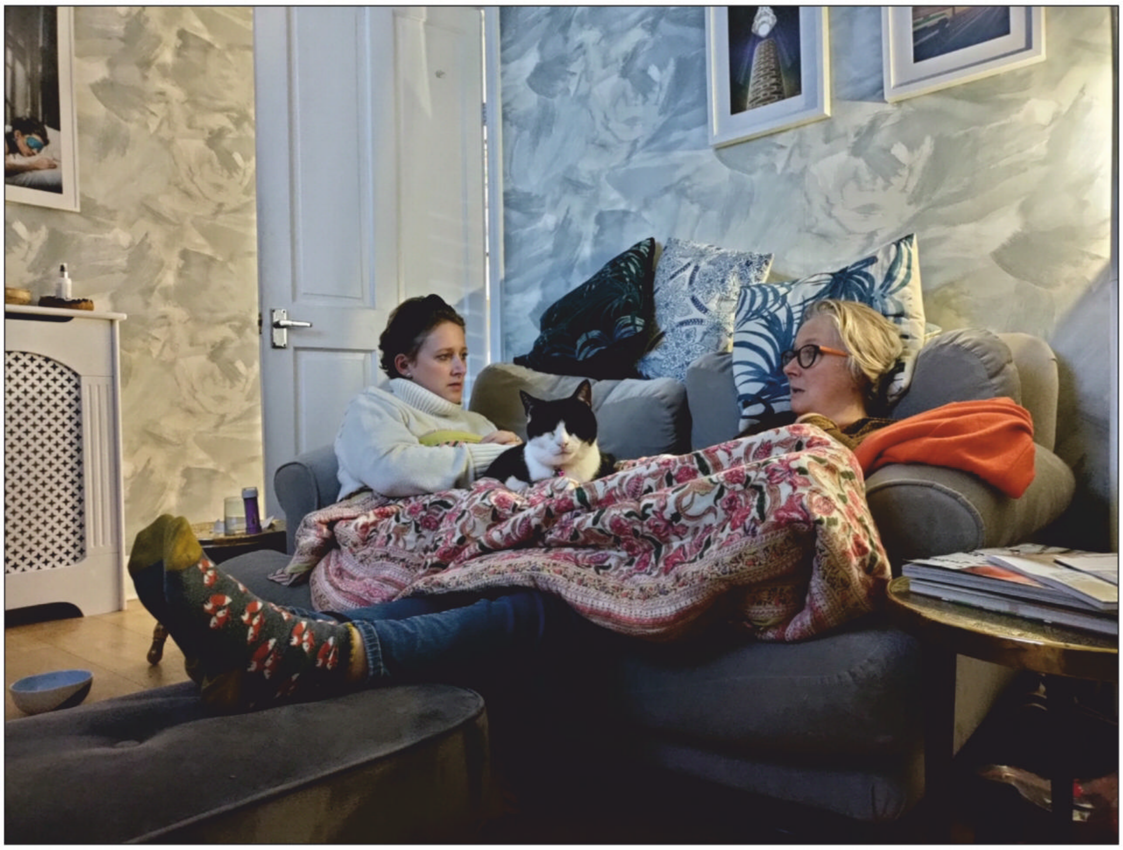
Poinsettias
£7.99

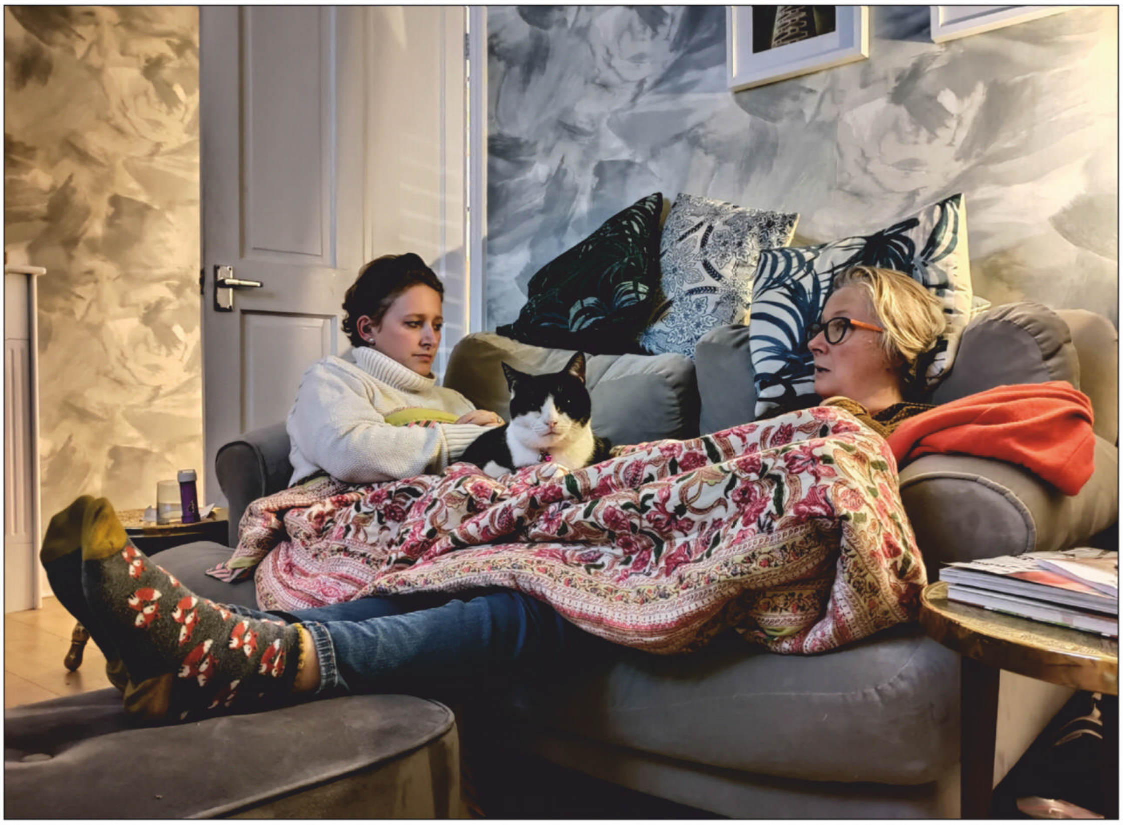


Here's the same subject, but this time shot with the 2x zoom.

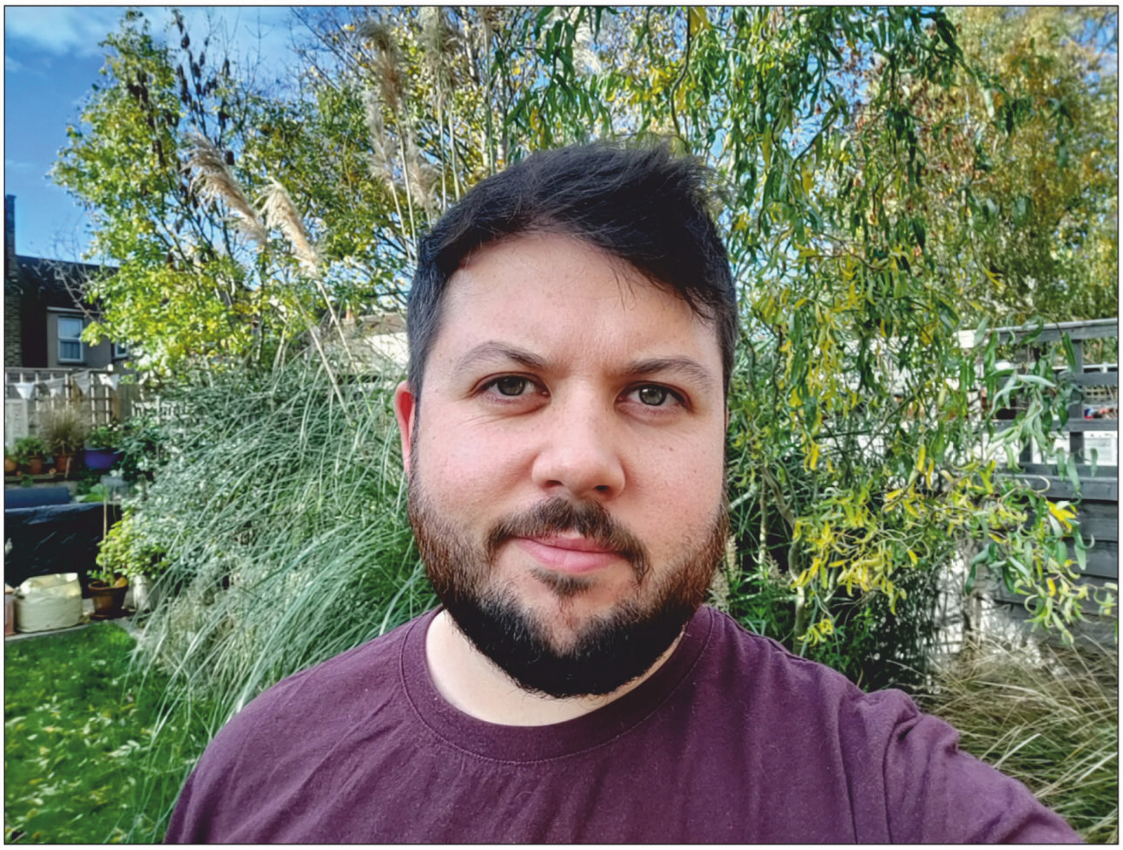


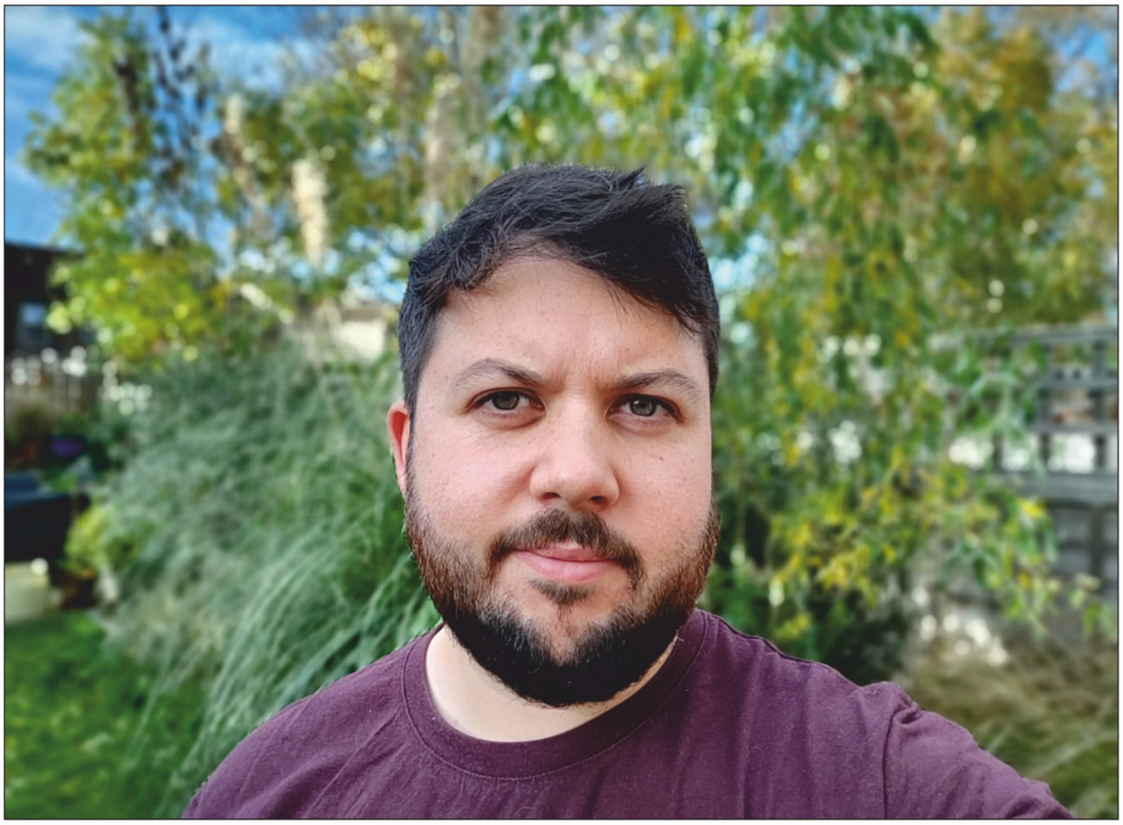
Here's an example of a macro shot.





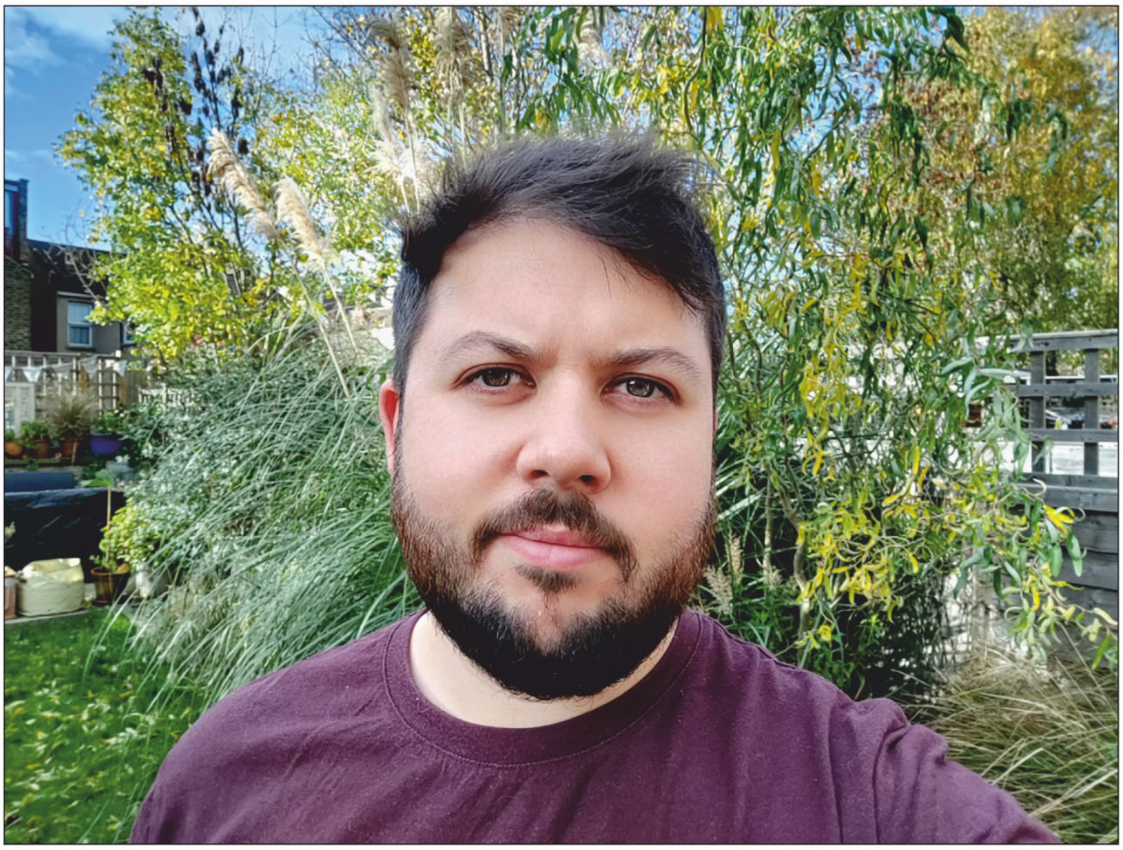
The top photo here was taken when the light was low, while the bottom image uses the night mode.





The top image is a selfie, while the bottom photo was taken using the selfie portrait mode.

Our final selfie was taken using the selfie beauty option.



Speaking of, the camera interface, it is pleasingly easy to navigate around and use, with minimal clutter within the viewfinder when shooting. Just remember to dive into its built-in settings menu if there's a control you can't find, as that where it'll probably live.

Much like the OnePlus 8T, the addition of standalone depth and macro sensors (2Mp a piece) seems pretty pointless. In the case of the depth sensor, shooting in portrait mode through the main module is hit-and-miss, with the phone often struggling to discern the foreground subject from the background and thus being unable to apply additional bokeh beyond the main sensor's natural depth.

As for the macro snapper, as suspected, the low resolution means shots are barely usable from a quality standpoint but add in some awful dynamic range and saturation management (see the flowers surrounded by green leaves on page 21) and you're better off taking macro shots via the main camera and cropping in as needed.

So long as there's some degree of ambient light, the phone's dedicated night mode makes low light shooting possible across both the main and ultra-wide sensors, while portrait mode when snapping selfies is best left alone, as edge detection from the phone's single 16Mp snapper frequently trips up. If desired, the easy-to-use tiered beauty settings are simple and effective, though.

Lastly, video capture grants up to 4K shooting, with both 16:9 and a 21:9 'Cine' profile to choose between. Footage is electronically stabilized well enough, however, colour saturation is lacklustre, with footage appearing a little washed out.

VERDICT

The Nord N10 5G is perhaps one of the most out-of-place members of OnePlus's current line-up; not because there's no place for an 'affordable OnePlus' but because it's comprised of a number of decisions and traits that seem uncharacteristic for the brand.

Its design and hardware are decidedly more generic compared to the company's other current phones, and while not all of the differences between this and the original Nord are bad (for example, a headphone jack, expandable storage), they don't echo what the OnePlus promise.

Thankfully, the company's signature snappy and clean user experience remains intact and is arguably the best thing about the N10, however, it's undermined by bugs at this early point in its life that need to be ironed out for it to be a considered recommendation.

There's also the fact that the mid-range space is fiercely competitive and while the original OnePlus Nord brings a compelling value for-money proposition to the table, the N10 5G sacrifices too much and shaves too little off the price to offer similar appeal.

One notable alternative is the Realme X50 5G (see page 27), which borrows from both the Nord and N10 5G but costs less than both. **Alex Walker-Todd**

SPECIFICATIONS

- 6.49in (2,400x1,080; 406ppi) IPS LCD, 90Hz display
- Android 10, OxygenOS 10.5
- Qualcomm SM6350 Snapdragon 690 5G (8nm) processor
- Octa-core (2x 2GHz Kryo 560 Gold, 6x 1.7GHz Kryo 560 Silver) CPU
- Adreno 619L GPU
- 6GB RAM
- 128GB storage
- Four rear-facing cameras: 64Mp, f/1.8, (wide), 1/1.72in, 0.8µm, PDAF; 8Mp, f/2.3, 119-degree (ultra-wide); 2Mp, f/2.4, (depth); 2Mp, f/2.4, (macro)
- Selfie camera: 16Mp, f/2.1
- Wi-Fi 802.11 a/b/g/n/ac, dual-band, Wi-Fi Direct, hotspot
- Bluetooth 5.1, A2DP, LE

- GPS with dual-band A-GPS, GLONASS, GALILEO, BDS
- NFC
- USB Type-C 2.0, USB On-The-Go
- Fingerprint scanner (rear mounted)
- Non-removable 4,300mAh lithium-polymer battery
- Fast charging 30 watts
- 163x74.7x9mm
- 190g

Credit: Getty Images/richardwatson

The tech that died in 2020

Some tech we'll miss. To others, good riddance. IAN PAUL reports

Even in a year like 2020, one thing didn't change in the tech world: Certain devices, technologies, and services shut down. The causes vary, as does the level of regret. Some things we'll miss; some things we never cared about; and others, we're glad to show the door. This year, we're dividing the departed by how much we think most people will actually care. Check out our list below and wave goodbye or good riddance to:

Tech we'll actually miss: Good products we're sad to lose.

You're still here? Products that died of indifference or neglect.

Good riddance: Tech that can't die too soon.

TECH WE'LL ACTUALLY MISS

FarmVille

Few Flash games hitting end of life deserve their own entry, but few games have ever seized the public imagination like Zynga's FarmVille. The company announced that as of 31 December, 2020, FarmVille would drift off into the sunset with the rest of the Flash-based world.

FarmVille existed on Facebook, and for a few years the social network felt more like a vehicle for the game than anything else. Between June and October, 2009, 62 million people signed up to play the game, as reported by *The New York Times*. At the time that was close to one-fifth of Facebook's global user base. FarmVille was huge, not to mention addicting. It had everything: critics, a Lady Gaga tie-in, business scandals, and one particularly horrific story – see fave.co/3c3fGz2.

With FarmVille you built a farm by growing virtual crops and livestock. You had freedom to design your farm as you wanted. The more work you put in, the bigger and better your farm grew. You could speed up progress with in-game purchases.

Between June and October, 2009, 62 million people signed up to play the game – almost one-fifth of Facebook's user base.

The addictive part was that FarmVille happened in real time, regardless of whether you were tending to your homestead. That led to numerous notifications during the course of the day that your crops were ready to harvest. A FarmViller delayed at their peril, as they risked ruining all their hard work.

It was a gaming obsession that we really haven't seen since. For anyone who misses the digital home on the range, there's always FarmVille 3.

Google Play Music

Nearly a decade ago cloud-based music lockers were the big craze from companies like Amazon, Apple and Google. But when the dust settles there can be only one (or two, or three). Google decided that 2020 was as good a time as any to stop duplicating its music efforts (since it's so busy churning out new messaging apps), and made December 2020 the final death date for Google Play Music.

It was a months-long demise for the service as Google encouraged its users to transfer to the new hotness: YouTube

Music. In August, Google blocked new uploads and downloads through its Music Manager app, and the music store was closed. In September, streaming music from the cloud started shutting down around the globe, and by the end of December all personal music collections were deleted.

The service replacing it, YouTube Music, is free to use and offers a premium membership to get ad-free music and to download music for offline listening.

OFF
SELECT
HOME
START
POWER
X
Y
A
B

The Nintendo 3DS was a revelation when it first came out in 2011.

Nintendo 3DS

After 9.5 years and 76 million unit sales, Nintendo finally said goodbye to 3DS in 2020. The handheld gaming device was a revelation when it first came out in 2011, because it provided a glasses-free 3D experience back when the world lost its mind and thought 3D was awesome.

We reviewed the 3DS back then, and said it "may be less a gaming handheld than a totable multimedia centre, only one of whose activities happens to be gaming".

The 3DS was for games, of course, but it also let you connect with friends, take pictures, stream videos from a variety of services, record audio, browse the web, and more. It was a device that continued to hold the fascination of millions for nearly a decade, but its time finally came in September when Nintendo said it would no longer manufacture the 3DS family of systems, as reported by the BBC.

Wunderlist

The writing was on the wall in June, 2015, once Microsoft acquired the company behind Wunderlist, the popular to-do list app. Wunderlist has been up for deactivation since 2017 as part of Microsoft's plans with its own To Do app. It took a while to check this item off the list, but the company finally stopped supporting Wunderlist in May.

YOU'RE STILL HERE?

Chrome apps

In January, Google announced it would be putting an end to Chrome apps. Not extensions, mind you, just those standalone web apps that operate in their own windows like a desktop app, rather than in a browser tab.

This is the second time we've heard the death knell ringing for Chrome apps. Google announced way back in 2016 that it would give up on Chrome apps by 2018. That never happened, but this time it appears to be the real deal. Google stopped accepting new public Chrome apps to the Chrome Web Store in March. By June, 2021, Chrome App support on Windows, Mac and Linux will end. Chrome OS will keep running Chrome Apps until June, 2022.

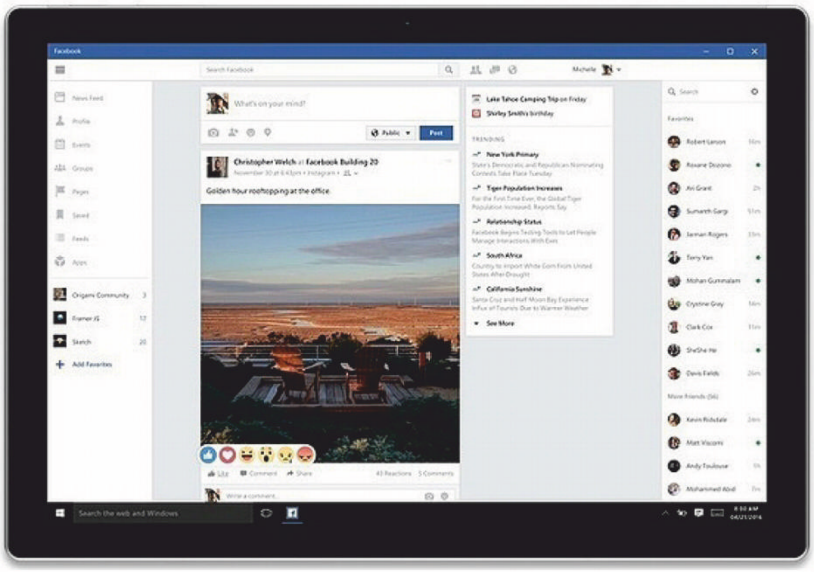
Google said it's giving up on Chrome Apps due to "significant progress of the modern web and its ability to deliver first class user experiences for users". Chrome Apps make less sense when Progressive Web Apps (PWAs) deliver a similar experience that isn't tied to Chrome. Plus with Android and Linux apps running on newer Chrome OS boxes, Google's browser apps are no longer necessary.

Facebook's Windows 10 App

'Facebook had an app in the Windows Store?' Yes, it did, and no, it never made much sense. When the app came out in 2016 it was meant to target not only PCs but tablets and Windows phones (remember those?).

The Facebook app did have some advantages, because it could use Windows 10's built-in notifications and support Live Tiles. But it never made much sense on PC because the website was Facebook's focus for the desktop. With phones gone, and Windows tablets able to use the website, it wasn't that surprising when Facebook put an end to its Windows 10 app in February, as MSPoweruser reported.

Facebook isn't the only company to discard its UWP app. In fact, Microsoft seems to be setting the stage to give



The debut version of Facebook for Windows 10.

up on UWP in the not-too-distant future. Microsoft shut down its ad monetization platform for UWP in June. This followed a 2019 decision to bring traditional Win32 games to the Windows 10 App Store, in apparent surrender to developer and user preferences. UWP apps are still kicking, but unless there's a big change the platform seems marked for irrelevance.

The Oculus Go reached the end of the road in 2020.

Mixer

Microsoft's dream of creating a Twitch competitor died on 22 July, 2020. That's the day that Mixer shut down and Microsoft partnered with Facebook Gaming instead.

Mixer was a live video game broadcasting service just like Twitch, but Microsoft's Twitch-style dreams were never that popular. Microsoft first got into the business after it acquired the 'interactive livestreaming service', Beam, in 2016. By 2017 it was reimagined as Mixer. In a push to increase the service's popularity Microsoft made multi-million dollar deals in 2019 with well-known streamers such as Ninja and Shroud. But it wasn't enough to boost the viewer base, and by the summer of 2020 all former Mixer streamers were free to move to other platforms.

VR follies

At one point many expected virtual reality headsets to either conquer the world or go the way of 3D TVs and mobile phone VR. Neither outcome really happened. VR keeps on trucking with newer devices like the Oculus Quest 2 that don't require tethering to an expensive gaming PC. Still, some VR platforms and devices said goodbye in 2020, including the Oculus Go and Oculus Rift S headsets.

On the mobile side, Google's Daydream VR platform for mobile phones gave up the ghost. Google said in the autumn it would no longer support

Daydream VR software, and that items like the Daydream VR app wouldn't work properly on Android 11.

Prior to Google's decision, Samsung killed its XR virtual reality service on September 30, 2020. The end of the XR platform came after Samsung's earlier decision to give up on its Gear VR headsets.

Finally, Steam decided to focus its VR efforts PCs and gave up on Steam VR for Mac.

GOOD RIDDANCE

Adobe Flash Player

In the 1990s, Adobe Flash wasn't just a component you used on the web; it pretty much was the web. Flash was how we played web games, every major entertainment site used Flash, and let's not forget about all those Flash-powered ads.

Flash was a fantastic tool for its time, but it had security issues and power efficiency problems on laptops, among other drawbacks. So as the modern web developed, Flash's doom was inevitable.

Flash actually held on far longer than anyone expected, considering Apple co-founder and CEO Steve Jobs fired the first shot at Flash way back in 2010 with his famous open letter. Its decline started officially in 2017 when Adobe said it would kill support for Flash by the end of 2020. Browser makers also started to restrict Flash, and eventually blocked it entirely.

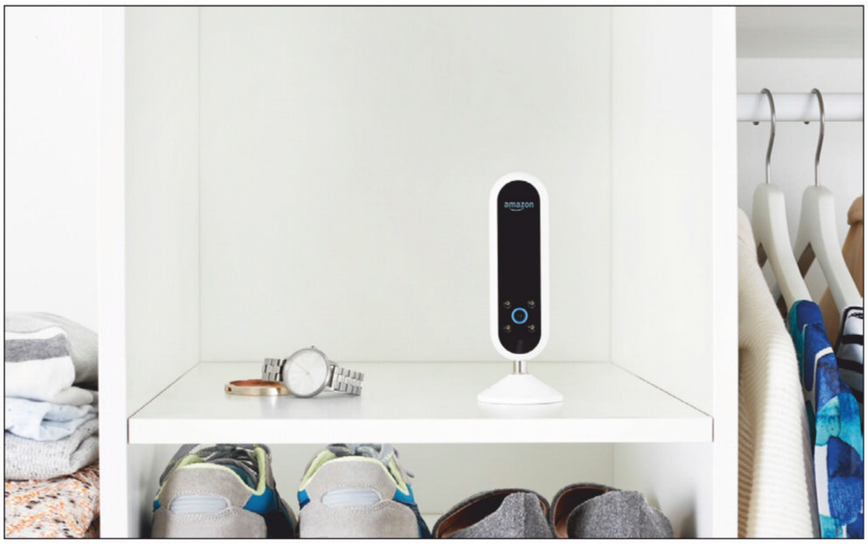
Now the time has come for Flash to fade away. On 31 December, Adobe ended support for Flash. The company blocked content from running in Flash Player on 12 January, 2021.

This is good news for the web's progress. Should you feel a pang of nostalgia, the Internet Archive emulates Flash animations, games, and toys in its software collection, letting you party like it's 1999 – see fave.co/3c0S3qS.

Amazon Echo Look

In the world of the Internet of things companies come up with some wacky ideas. One such was Amazon's Alexa-powered Echo Look camera. This was a selfie camera that would offer fashion advice based on what you were wearing. The fashion advice was a mash-up of machine learning and 'fashion specialists' that would judge your look based on colour, shape, fit, and, of course, shoes.

When we reviewed the Look back in 2018 we thought it was fun for taking selfies, but the fashion advice left a lot to be desired. Shoppers apparently thought so too as it never caught on. The Look and its companion app ceased to work on 24 July.



Amazon's Echo Look never caught on with consumers.

Amazon hasn't given up on doling out fashion advice, however, as that feature is now part of the Amazon Shopping app and other Alexa-enabled devices.

Windows 7

Versions of the Windows operating systems are so widely used they have several deaths to prepare users for the inevitable. These include the end of retail sales, end of feature support, and the end of security updates. The latter is the final nail in the coffin, and Windows 7's end of life hit in January, 2020. PCs rocking Windows 7 can still operate, of course, and like Windows XP fans before them Windows 7 users will likely keep logging time on the old OS regardless of the lack of security updates.

Windows 7 was a welcome follow-up to Windows Vista, in keeping with the Microsoftian tradition of one bad OS release followed by a good one. Windows 7 built on some of Vista's strong foundations while removing its annoyances and producing a generally better experience.

It was a fantastic OS, but if you're using a Windows 7 PC it really is time to move on. Most Windows 7 PCs should be able to run Windows 10, and while the interface isn't the same it's a fantastic operating system in its own right.